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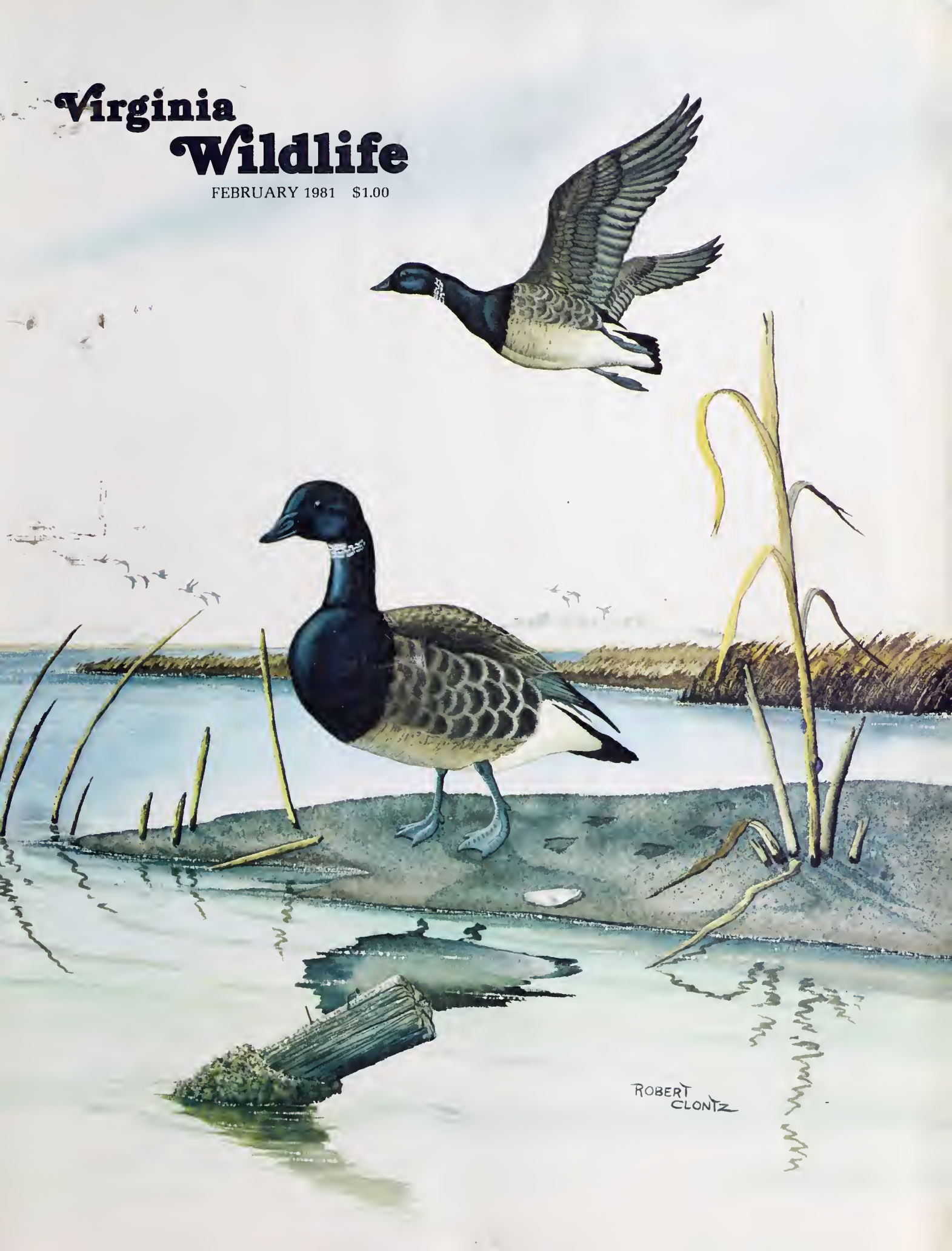

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Letters

WHAT ABOUT BIRD HUNTERS?

While I enjoy reading *Virginia Wildlife* immensely at present, I have one suggestion for improvement: give us more grouse and quail related stories. In your December issue, you include two stories on fishing and no bird hunting articles. Your "Index to *Virginia Wildlife*" reveals that during 1980 you've published only three or four articles on bird hunting as compared to a whopping 30 or so on fishing and water-related activities. I don't begrudge the fishermen the enjoyment they get from reading *Virginia Wildlife*, but how about equal time (and space) for us bird hunters?

Chuck Lacy
Wytheville

When we schedule articles for a particular issue of Virginia Wildlife, *we strive for a balance of articles on hunting, fishing, recreation, plants, Virginia locales, birds, and other wildlife topics. Some months, we are more successful than others. Our success —or lack of it — depends almost completely on what articles have been submitted to us for consideration. It just so happens that we receive lots of well-written fishing articles; we receive fewer good submissions on the topics you mention. Naturally, we wish we had more bird hunting articles to choose from. Perhaps your letter will encourage some writers to submit pieces to us.*— Assistant Editor.

CRITICISM CRITIC

In the past few months, it seems that so many people have written to complain about you. We can all use a little constructive criticism from time to time, but many of the attacks have bordered on hysteria. Statements like, "how could you be so dumb," "you're not as good as so-and-so," and "you have no business publishing a wildlife magazine," go way overboard in bringing to your attention the small mistakes that these insensitive comments were aimed at.

I think you publish a fine magazine. It's affordable, informative, and beautiful. I'm so glad you didn't mislabel the little nuthatch in the December issue. I'm sure these people would storm your headquarters and burn it to the ground.

So many would miss a bright spot in their lives if you weren't around.

Ward Cowan
Madison

We certainly appreciate your "two-cents'-worth." Thanks!—Assistant Editor

APOLOGY

In the December 1980 issue, the illustration on page 4 ("Cattontail Country") was done by Dick Bernard. We omitted the illustration credit.

Editorial

STEEL SHOT REVISITED

Steel shot was born in controversy back in the early 1970's when manufacturers discovered how to make soft steel spheres that supposedly wouldn't mar steel shotgun barrels. Some environmental and conservation groups jumped on steel shot as the solution to the death of 1.6 - 2.4 million waterfowl annually from lead poisoning. Game Commissions and sportsmen alike resisted the idea of injecting an unknown like steel shot into their traditional sport.

Steel is lighter than lead; so much lighter, in fact, that only 1⅛ ounces of the larger size pellets can be put in a 12-gauge shell that can hold up to 1½ ounces of lead. Hitting power was immediately suspect and tests made with same size shot showed steel less effective beyond 40 yards. This, coupled with rumors of gun barrel damage, was enough to send waterfowl hunters running in the opposite direction.

Meanwhile, yielding to increasing pressure, the U.S. Fish and Wildlife Service established steel-shot-only zones beginning in the Atlantic Flyway in 1976 and progressing westward yearly. In Virginia they included Virginia Beach and the Chickahominy River. Since steel shot was only manufactured in 12-gauge it could not be required of hunters using smaller or larger gauges. Sensing a loophole to avoid buying the costly and controversial new product, many waterfowl hunters went to 10, 16 and 20-gauge guns. Steel shot sat gathering dust on the dealer's shelves.

Assured that steel shot was finally available in other gauges, the U.S. Fish and Wildlife Service announced in January 1979 that it would require its use in all gauges used for waterfowl hunting in steel shot zones beginning in the fall of 1980.

Suddenly last fall, dealers' shelves were stripped and sportsmen were demanding more steel shot. Sporting goods dealers stocked up according to past demand and manufacturers were unable to supply more to ease the situation during the 1980 waterfowl season. Prices soared on remaining boxes of steel shot, as did the tempers of sportsmen facing the new dilemma, even though it was of their own making. So ended the 1980 waterfowl season, with steel shot still racked with controversy.

An amendment to the federal budget allowed states to abstain from federal enforcement of the regulation if they disagreed with it. Virginia chose to go along with the regulation not only because Virginia Game Wardens are required to enforce federal law, but because it seems steel shot may have some redeeming value.

The Fish and Wildlife Service is finding through x-ray studies more and more birds with five or more steel shot in their gizzard that, had these shot been lead, would have been sick or dead. Lead ground off in the gizzard causes paralysis and death while the iron filings are harmless. So it seems, when all the rough spots are ironed out, sportsmen may soon find more ducks winging their way down the flyway.

As for effectiveness, it has been found that going two sizes larger in steel shot produces kills as effectively as lead loads. In fact, steel shot patterns better than lead. Even geese succumb regularly to steel #1's and BB's. Chokes must also be opened up from full to modified to get the best patterns with steel. Now that steel is proving itself biologically and ballistically, it's time for waterfowl hunters to take another look.—*HLG*

Panfish On Ice

Virginia's ponds are just waiting for you to break the ice.

John J. Ney

Finding fish is not difficult; they'll tend to be in the same place you found them last summer (above).
Ice conditions on Virginia ponds can change quickly, so practice caution (right).

The setting sun cast a reflective glare across the ice-covered pond. I turned my gaze back to the small hole I had just chopped open, the fifth of the day. Maybe the local folks are right, I thought, catching panfish through the ice just doesn't happen in Virginia. Maybe these Dixie fish are more genteel than their Yankee cousins.

These melancholy musings were interrupted by a sharp tug on my jigging rod as the tiny bobber disappeared down the hole. Thirty seconds later, a fat bluegill lay flopping on the ice. In the next five minutes, it was joined by two more gills, a crappie, and a 14-inch bass. After that, I lost count, as did my partner, Larry, fishing twenty feet away. When we collected our fish in the gathering darkness an hour later, we totaled eighty keeper-size panfish. At least half that many smaller fish were plopped back down the holes.

As we trudged over the hill to our car, breath coming in frosty bursts, Larry and I were elated. Fresh fish in January would certainly be a treat. More importantly, we had vindicated ourselves to the scoffers who strongly implied that ice-fishing in the Old Dominion was for the demented.

In succeeding weeks, it became obvious that the only reason for their skepticism was that no one had tried ice-fishing the local waters. Fishing late afternoons, we consistently repeated our early success. Ice-fishing was actually better than we had experienced in Minnesota, Nebraska, and Wisconsin, where thousands of fishermen vie for the hotspots. Our freezers filled before the March sun ended our season, but by then we were addicted to ice-fishing, southern style.

That first winter in western Virginia was a cold one. For the past four years, ice cover on local ponds has lasted from three weeks to three months. Even in a warm winter, Sunbelt ice-fishing makes up in intensity what it lacks in duration versus northern waters, where ice cover sometimes lasts six months. Bluegills, crappies, and bass bite avidly and consistently, with no midwinter doldrums. And there is virtually no competition to beat other fishermen to the hottest spot. I view this as a mixed blessing, since some companionship helps the time pass on the infrequent slow day, and more fishermen make the fish easier to find.

Ice-fishing is so simple and rewarding that it's a wonder so few of Virginia's ardent anglers have tried this off-season sport. Perhaps it's fear of ice conditions that holds them back, or maybe lack of familiarity with equipment and techniques. Here are some suggestions that can make your first experience with hard-water angling a safe and rewarding event.

Foremost is safety. Ice conditions on Virginia ponds can change quickly with the weather, and each pond is different. In 30 years of ice-fishing, I've never known the panic of breaking through. I attribute that to caution.

Before any trip, follow the weather conditions for a few days. Nighttime temperatures in the low teens with daytime highs in the twenties are generally enough to set up several inches of new ice on a sheltered pond. Three inches of such hard ice is adequate to support anyone and much better than a foot of slushy ice during the spring thaw. Always take a buddy and a length of sturdy rope, just in case.

While your partner waits on shore, move out across the ice, sliding one foot ahead of the other. Generally, if the ice close to shore will support your weight, ice futher out will be safe. To be sure, test the ice ahead of you with an ice-chisel or an axe. Though there may be slush on top, if you have at least three inches of hard ice underneath, it will be safe to keep going. When you reach where you want to fish, your partner can follow. It's wise to fish at least thirty feet apart at first, until you're sure the ice can support both of you in the same place. As you become more familiar with pond ice on succeeding trips, you'll become more sure of yourself and begin to "read" the ice. A final word on safety: know your pond. Springs, stream mouths, and outlets are to be avoided at all times.

Your most essential equipment is warm clothes: a hooded parka, gloves, thermal underwear, and most especially, insulated rubber boots. What keeps you warm on a deer stand in November is usually quite adequate for a few hours of January ice-fishing. Beyond proper attire, you'll need a lot less than the average openwater angler routinely carries. An eight-inch diameter hole can be opened with an axe or even a crowbar, but the best tool is a five- to six-foot metal pole with an attached chisel blade. This ice-chisel can be jerry-rigged with a chisel stuck in a hollow metal tube or a file welded to a shaft and sharpened on one side. Using an ice-chisel allows you to stand while you chop, away from the splashing water and ice. It's also best for guiding you across unfamiliar territory. A minnow net or seived kitchen ladle works well to dip the ice from the hole, especially on cold days when it skims over.

You can buy or make your fishing equipment for less than the cost of a naturalized bass plug. An ideal jigging pole can be made from the tip half of an old spinning rod. Fit the butt end into a wooden dowel to serve as your handle and add a couple of pegs to wind the line. You can also fish with ultralight spinning gear, but your reaction time increases with the longer, heavier equipment.

Equip your rod with 50 feet of two- or four-pound test monofilament; light line is a must in the clear cold water. Use a #10 or #12 gold wire hook with a BB shot clamped just below the eye and painted a bright orange or green. These "teardrops" are also available from mail-order sporting goods firms or you can pick them up at any bait store in northern states.

For bait, use small grubs or small pieces of redworm threaded on the hook. Cornborer or bark beetle larvae work fine. Mealworms, often available from local pet stores, are also excellent, as are waxworms. A variety of grubs can be purchased cheaply from mail-order bait stores which routinely advertise in national outdoor magazines. Excess grubs keep for months under refrigeration.

Finding fish is usually not difficult. Panfish and bass tend to be in the same places you found them last summer, around weedbeds and dropoffs. Use a heavy sinker to lower your line to the bottom. Attach a tiny cork (just big enough to float) to fish about a foot from the bottom. Panfish are usually near the bottom during the winter but can occasionally be caught right under the ice. Jig your pole once or twice a minute, raising the line six inches to as much as four feet. Any slight wiggle of the cork justifies setting the hook. It's best to stay close to the action. Bring along a large pail to sit on which can serve double-duty to carry your gear and fish. Playing hefty sunfish and bass on light line requires some dexterity and patience but adds to the fun; these winter fish are not at all sluggish.

If at first you don't succeed, chop more holes and keep moving. Early morning and late afternoon are generally when the fish are most active. As on our first outing, the cork may not wiggle all day, only to go into perpetual motion as the sun fades from the sky. On some days, however, fish will bite consistently throughout the bright hours — one of the unresolved mysteries adding to the anticipation.

If you follow these simple tips, jigging for panfish should be a cinch. Whether you'll become an ice-fishing addict depends on your enjoyment of winter outings and your love of fishing. Beneath their icy tranquility, Virginia's ponds harbor a bonanza of untapped action. It's just waiting for you to break the ice. □

MOLLY

A special pet surprises her owner with her hunting skills.

by Jack Randolph

I'm going to shoot that dog," said the disgusted owner as he raised the shotgun to his shoulder and took aim at the big pointer.

"Is he really going to shoot him, Dad?" asked my son, John, a worried look in his eyes. "Tell him we'll take him." Then, to the owner: "Don't shoot him."

"Are you really going to shoot him?" I asked.

"Might as well," replied the owner, "he's no good anyhow."

"If you really want to get rid of him we'll take him," I offered, wondering about the reception we'd get when we got home.

"He's yours, then. You know he's hardheaded and really not worth dog feed."

I knew the dog and I knew that his owner was right. Old Ben was a big yellow and white pointer that would rather run than eat. Turn him loose and he was in the next county and if he made game you'd never know about it. Yet he was a classy-looking dog and around the house he had good manners, as long as you kept him tied.

So Ben joined the family, with nothing more expected of him than to eat, sleep, run with the kids and bark if someone came around the house. In this role, Ben found his new niche. The only problem we had with him was convincing our hunting friends that this sweet looking pooch was absolutely no good for hunting.

One of our friends remained unconvinced. We had Ben about two months when Frank called one evening. He said that his son was working at a vet's office and some G.I. had gone overseas and left an English setter bitch behind. He said he had the setter and would gladly swap her for Ben.

I have always had a soft spot for setters so after no little urging, the family and Ben piled into the car and we went to take a look at the setter. Frank had her in a pen behind the house, but in the glow of the flashlight I discovered a pair of soft, liquid eyes that seemed to cry out, "Please take me home, I want to be yours." Frank, it turned out, wanted Ben to put him at stud. The deal was made and Molly joined our family.

From the day she joined our household, Molly made it clear that she wanted nothing more out of life than to please us. She was far from a puppy and from the California tag on her collar, we knew that she was a stranger to New Jersey, where we were stationed with the U.S. Army at Fort Dix.

It was late August when Molly came to live with us and early September before I had a chance to take her out to see what she could do. There were a few fields on Fort Dix that held some quail and pheasants and it was in one of these fields that Molly made her debut.

From our brief association around the house, I learned that Molly would obey commands. In the field, she obeyed beautifully and ranged perfectly. Twice she hit a brief point, both times on rabbits. Once she stumbled into a covey of quail which she ignored. It was clear that we had traded a good pet for another good pet.

Although we returned to the fields several times each week, Molly never displayed any interest in game. She romped like a puppy, shedding excess weight and slimming

down to hunting trim. She was not pretty as setters go. She had a Roman nose and her white coat was liberally sprinkled with black. One ear was solid black. She showed a deep canine intelligence, though, and Molly was a loving dog.

The fields around Fort Dix were well stocked with pheasants before the opening of small game season. Often, I looked at Molly and wished she had been raised to be a hunter. On opening morning, as John and I prepared to leave the house, he said, "Dad, let's take Molly."

"She'll just get in the way, son. She's not a hunting dog."

"I'll watch her," countered the boy. "Look at her, she wants to go."

It was plain that Molly did show an unusual interest in the guns, and her wagging tail and pleading eyes made it clear that she wanted to share in the fun, whatever it was going to be. I relented, and boy, dog and dad piled into the car and headed for the fields.

I pulled the car well off the road along one of the huge fields we intended to hunt. Molly nosed around the car as I distributed shells and we made ready to hunt. We loaded our guns and started into the field when I noticed Molly was missing.

"Where's Molly?" I asked.

"She was here a minute ago," answered John. "There she is, out in the field. Dad! she's pointing!"

The boy was right. Molly was frozen on a solid point. I hung back, coaching John to move in and flush the bird. John moved in carefully, eyes wide with anticipation. He jumped a bit as a gaudy cock pheasant exploded into the air complete with a raucous call. The boy quickly recovered and fired, dropping the bird cleanly about 40 yards out in the broom straw. Molly glanced back over her shoulder, still standing where she pointed.

"Fetch," I commanded speculatively. I was amazed when the dog broke and ran precisely to the downed bird and brought him back to hand in one of the prettiest soft mouthed retrieves I ever witnessed.

I looked at John, he looked at me. The boy nodded and observed, "I guess she had to see the guns."

That season Molly found and retrieved 65 pheasants, two dozen quail and a few grouse for us. In the course of the season she made all kinds of retrieves, some under difficult circumstances, but never did she lose a bird.

The following year, she repeated her performance on woodcock as well as on pheasants, quail and grouse. It was plain the old dog didn't like woodcock, but she aimed to please.

When we returned to Virginia and settled down on a farm in Prince George County, Molly soon pinpointed every covey of quail on the place and after the deer season closed, we shared many winter mornings.

Molly is gone now, but out in the pen behind the house, her son Cappy remains to remind us of a great old setter who enriched our lives as much as we hope we did hers. Oh, yes, Molly wanted to please. When Cappy was born, he had 11 brothers and one sister. □

The Scent Post

How biologists are attracting wildlife to learn more about population trends.

by Joe L. Coggin and John S. Zack

Wouldn't it be nice if all we had to do to inventory wildlife was to call them in and count noses? Unfortunately for wildlife biologists, it doesn't work that way. Animals simply won't stand still to be counted. If you want to count them, you must find them, and then it's not easy.

A great many techniques have been developed for inventorying all types of wildlife. Aircraft have been widely used to count waterfowl. We count doves, woodcock and other species by establishing permanent routes, travelling these routes a specified number of times a year at prearranged hours, and recording the number of calling birds noted.

Developing methods to inventory furbearers offers a special challenge. Most are secretive by nature and are usually abroad at night. Some furbearers, such as muskrats and beaver, are relatively easy to inventory because you can easily find their lodges and estimate their population. Others, such as foxes, raccoons, bobcats, mink, otter and weasels are much more difficult to count.

No method has yet been determined to count each and every animal in a given area. Where counting of the population is not feasible, it is often necessary to develop procedures where you can at least determine population trends. With the use of modern mathematics and sophisticated computer technology, trends can be determined accurately if a method is developed for securing reliable data in the field.

Take deer, for example. We can obtain valuable data from the information furnished by the game checking stations, reporting the number of deer harvested each year. But these data do not tell us how many deer remain alive in the state. There are, however, reliable mathematical formulas that may be applied to the harvest data that indicated approximately how many deer we have and the trends in the deer population. This information, coupled with information obtained through examination of deer carcasses and deer habitat indicate the status of the health of the herd and the distribution of the population within the state.

In the case of furbearers, the Commission receives data from furbuyers operating in the state that provides a rough estimate of the amount of fur taken and trends in the harvest from year to year. However, because only beaver, otter and bobcat are controlled by tags, the figures on the harvest of other species do not enjoy the reliability of the deer data obtained from checking stations. Furbuyer data also fails to supply information as to where the fur was taken within the state, thus providing no information concerning the density of the populations throughout Virginia.

In order to fill in this missing frame in the furbearer picture, we borrowed a technique that has proven useful in western states for getting a handle on coyote populations: the use of scent post stations.

The concept is very simple. It involves attracting animals to a location where they will leave tracks that can be identified and counted by a trained observer. Of course, the stations must be established in accordance with certain criteria so that they will provide representative samplings of the area year after year.

The scent post itself consists of an area three feet in diameter that has been cleared of all vegetation and levelled and smoothed with appropriate tools. A small scent capsule is attached to a wooden stake which is placed in the center of the circle. The stake is pushed down into the earth until the scent capsule is about a half-inch above the ground. Dried earth or sand is then sifted over the area to create a suitable surface for track impression.

Wildlife in the area is attracted to the scent capsule, which was developed by the United States Fish and Wildlife Service. Consisting of ten different chemicals, the scent attracts a wide variety of animals.

When preparing scent stations the biologists are conscious of the weather forecasts for the next three days. Rain can erase the tracks and destroy the entire effort. The station is erected on the first day and visited each of the next two days.

On each visit to the scent station the number and identity of the tracks are recorded on special field forms developed by VPI & SU. Instructions for conducting the survey are included on each form. After completing the track count, all of the tracks are brushed out to leave a smooth surface for the following day. Scent capsules destroyed or taken by animals are replaced before leaving the scent station. After the second day's sampling, the capsules are removed and buried.

There are approximately 3,500 scent stations located on National Forests and Commission-owned lands in Virginia. The study is designed so each Game Refuge Supervisor has a line of 100 stations. A few lines east of the Blue Ridge have less than 100 stations. Each line is divided into smaller units of ten stations each, with each series of ten stations located at least a mile from the next series. The stations are located two tenths of a mile apart on a continuous route.

The routes are usually on unpaved secondary roads located in typical habitat through areas assumed to contain average populations of furbearers. The study is conducted annually during October.

Originally, the study was designed to collect data on such furbearers as raccoons, foxes and bobcats. It soon became clear that many mammals and birds were attracted to scent stations even when no scent was used, the newly turned earth in itself being the attractant. Therefore, data are currently being collected for all tracks that can be identified including those of bear, deer, opossum, squirrel, rabbit, skunk, chipmunk, raccoon, bobcat, grouse, domestic dog, red and gray foxes, turkeys and house cats. This method may be valid for many species and may produce considerable insight into relationships between species and their abundance over periods of time.

THEORY

The artificial scent station technique allows for year-to-year differences in wildlife visitation to be detected. To determine whether these track count changes are significant or not, the wildlife manager may then apply statistical tests

using probability theory, such as the Wilcoxon Matched-Pairs Signed-Ranks Test.

Study areas are usually within broad areas, such as entire districts, regions, or states. The scent post procedures are not intended to be a true census method, nor is the technique effective and reliable in determining annual population trends on small areas. In this case, "abundance" refers only generally to variation in track counts of a given species because of the large number of environmental factors which influence scent post visits in different areas. The technique is also limited in that it does not effectively sample all species present in an area.

Essentially, the purpose of scent post route studies is to calculate visitation rates, and the number of tracks of one or more individuals of a given species at a scent station. Neither the number of individuals responsible for a given number of visits, nor the proportion of individuals of a species in an area visiting a scent-station line is known. Furthermore, there are no established boundaries for the study areas containing scent post lines although both interspecies factors (e.g., mobility, feeding and social behavior, etc.) and intraspecies variables (e.g., food abundance, species density, etc.) probably establish some form of limits.

The reliability of using the artificial scent station technique for measuring yearing trends in "abundance" rests on the belief that relationships between visitation rates and densities of a species are adequate enough for the index to provide useful data on general trends. Uniformity in information recording methods and conditions (e.g., weather) is extremely necessary due to the nature of yearly data comparison and interpretation.

COMPUTER USAGE

Scent Post 1, a computer program developed by the VPI&SU Department of Fisheries and Wildlife Sciences, performs select calculations on yearly Virginia scent post data. These computations are conducted for regions, districts, the state, and east- and west-of-the-Blue Ridge.

Although the calculations are not difficult and can be performed manually, they are certainly tedious. An individual assigned to producing the same results as produced by the computer program would take from one to two weeks while the computer takes under 2 minutes. Cost efficiencies show hundreds of dollars saved by using the Scent Post 1 program.

The program is written in FORTRAN IV and was developed and tested on an IBM 370. All computations are performed in main memory and no intermediate files are required. The course deck, documentation, and test data may be obtained through the Department of Fisheries and Wildlife Science.

INPUT

Data forms were developed for field use. These are called op-scan forms and are similar to those used in test-taking. After successfully completing both yearly data collections, field personnel send these forms to the senior author who reviews them, then sends them to Virginia Tech where the data are automatically converted to data cards. A single card will contain all the information present on one optical scan sheet. These cards introduced into the computer card-deck represent that particular year's scent post information.

Specific inputs to the source program include: identification number assigned to the wildlife manager responsible for sampling one or more scent post lines; day of the run (either 1 or 2) number of operable scent stations per line (spot nights) on a sampling day; region number where a specific line is located; district number; location east or west of the Blue Ridge; wildlife manager's social security number; and total tracks observed for each of 15 wildlife species on a line.

OUTPUT

A computer printout from Scent Post 1 includes the following: a title page providing general information on the Virginia Wildlife Population Trend Analysis program; a table of percentage changes in total track counts from the previous year; these relative differences will be calculated for all 15 selected wildlife species and shall be provided on regional, district, statewide, and east and west of the Blue Ridge bases; a table showing the result of the Wilcoxon Matched-Pairs Signed-Ranks Test; one table will be produced for each two successive years of data; included will be the stated statistical level of confidence, a tentative population trend for each of the 15 species, and symbols designating the statistical significance or non-significance of the trend; also provided will be an interpretation of the tabular results; a list of yearly diversity values for all management regions and districts in Virginia and cumulative results for areas east or west of the Blue Ridge and statewide; each listing will include information from two successive years so that differences in yearly figures can be observed; an extrapolation which predicts track count for all 15 species in the next sampling year; this includes appropriate confidence intervals on the projected values; a matrix expressing the fractional relationships between all species track totals recorded statewide in a single year; and a table displaying adjusted species track totals per 1000 spot night; this is provided on a yearly basis for regional, district, statewide, and east and west-of-the-Blue Ridge data.

Through proper analysis and interpretation of this output, it is expected that increasingly efficient and effective wildlife programs will be proposed and accepted.

CONCLUSION

Although Virginia's artificial scent station program has progressed rapidly since it was instituted three years ago, it is still in a developmental stage. One future goal is to create more scent station lines. This may increase the reliability of data. Another aim is to experiment with different kinds of "scents" in order to determine the best attractant for the study. □

Joe Coggin is a game biologist supervisor for the Commission of Game and Inland Fisheries. John Zack is a graduate student in wildlife and forestry at VPI & SU.

Scavengers of the Waterway

Sea gulls have a special function in the web of life.

Rick Perry

by Carl "Spike" Knuth

It was a very quiet day in the duck blind. I "glassed" the horizon with my binoculars looking helplessly at huge rafts of inactive ducks strung out over the water, just loafing and feeding. Scattered about were smaller groups moving serenely on slightly rippled waters. From time to time, small groups of ducks would "buzz" by, but far out of range as they joined their rafting buddies.

As I scanned the horizon, I noted a large swarm of scaup, or bluebills, milling about nervously, then settling down again. Minutes later I watched a squadron of gulls moving slowly up the shoreline. Just ahead of them, ducks began running frantically to become airborne. They swarmed into the air, circled and settled down again a safe distance away.

The hazing of rafts of ducks by gulls is not uncommon and it is done for a practical reason whether by accident or design. Occasionally a crippled or sick duck has taken refuge in the raft. As the raft of ducks is scared up by the threatening gulls, the disabled bird is left behind. It is usually beset upon, killed and eaten quickly. Once in a while, a perfectly healthy ruddy duck — which prefers swimming from danger rather than flying — is left alone on the water. An interesting and unusual cat-and-mouse game ensues with the gull trying to catch the little ruddy — an almost impossible feat.

Gulls have a very special function in the web of life: that of keeping our waterways clean of dead fish, birds, mammals and refuse on which they feed. They are scavengers which prevent our waterways and beaches from becoming fouled with decaying organic matter. In recent years, gull populations have increased, probably due to the increase in the refuse that man disposes of in such a sloppy manner. As we pollute our waters at an accelerated rate and conduct open landfill sights near water, natural, physical law dictates an increase in gull populations. We have created an abundant food supply to complement its abundant habitat.

The appetite of the gull family is one of its most outstanding characteristics. They eat anything and do so constantly. On the oceans, large salt water bays or big lakes, they follow large ships, cleaning up refuse that is tossed overboard. Huge flocks follow the fishing fleets to feed on the scraps from cleaned fish. Other foods are obtained by patrolling beaches and waterways. Gulls will also feed on dead waterfowl and sea birds; starting on the eyes, then the viscera, they methodically consume just about the whole bird. Oddly enough, they will leave or allow to spoil further the very parts that are consumed by humans, before eating them. Occasionally, gulls will prey on live fish by flocking above schools that are roiling the surface, dropping down to pluck them out of the water. In most cases, these fish are being chased by bluefish and rockfish and the gulls are picking up the scraps as well.

In fall, shores and beaches are scoured clean of aquatic carrion by the increased populations of newly-hatched gulls. Gulls leave the waters and go to feed inland as well on insects such as grasshoppers and crickets, returning at evening in long glides onto the water. Some of the larger gulls feed heavily on rodents. Sometimes they soar like hawks as they hunt. Gulls will also follow the plow feeding on grubs, worms and beetles.

Along the seacoasts, the bigger gulls have an interesting feeding habit. They instinctively drop clams or other shellfish from high above the ground to break the shells open and get at the contents. For the most part, however, gulls stick to scavenging on aquatic carrion.

Gulls are referred to by most people as "sea gulls," which

is misleading since they are found in all of our major inland lakes and river systems. Gulls that inhabit the salt water bays, marshes and beaches seldom wander far from the shore. There are about 15 species of gulls commonly found in various parts of North America — five being common in Virginia — and over 40 species inhabit the world. Gulls differ from terns — birds found in similar habitats — in a number of ways. They have bigger bills with a hook on the end for tearing rotting flesh. The main exception to the rule is the appropriately-named gull-billed tern. Gulls are able to alight on the water to feed while terns must hover, then plunge into the water for small fish. Gulls have webbed feet and swim bouyantly on the water. Terns have a noticeably forked tail while the gull's tail is fan-shaped or square. Gulls are much larger than terns, with only a couple of exceptions. Gulls can also be identified by their effortless bouyant flight as they soar and glide on updrafts and currents carried by their long, narrow, pointed wings.

The herring gull is one of the most common gulls on this continent. The adults are white with delicate, bluish-gray back and wings. The outer primaries are black with white tips. Its bill is yellow with a red spot on the lower mandible. Its legs are flesh colored. The herring gull measures about 24 inches, while its wingspan is around 56 inches. The young herring gull varies in color from brown to sooty gray to dull white, depending on its age. First-year birds are very dark and get progressively lighter with each year until full adult plumage is attained. Young birds have pinkish-gray bills.

"The gull, ordained as a waterway sanitary engineer, expands its population accordingly, to do its job for man's benefit."

Another common gull of Virginia and most of the United States is the ring-billed gull. It also goes through the plumage changes from immaturity to adulthood. The adult has a yellow bill with a black ring, and yellow legs. It is smaller than the herring gull and tends to be more migratory, favoring warmer climates in winter. It is young ring-bills and young laughing gulls that Chesapeake Bay anglers frequently come in contact with. They follow boats, picking up tidbits of chum or fish scraps. They also signal anglers to the whereabouts of feeding bluefish as they themselves feed on the small menhaden that are driven to the surface by ravenous blues.

The laughing gull is almost exclusively a saltwater coastal species, while herring and ring-bills inhabit inland waters as well. Occasionally it will feed inland in plowed fields but seldom far from salt or brackish water. Like the other gulls, the laughing gull goes through the plumage changes, the young being very dark brownish-gray, with white-edged wings, banded tail and dark bill and feet. In its second winter, it loses the dark tail band to an all white tail as its back turns dark gray and wing primaries turn black with a streaked neck. The adult laughing gull has a gray back and wings, retaining black primaries and white trailing edges. Its head becomes black with white rings around the eyes, while its bill becomes red and feet a deep red, almost black. It is the largest and darkest of the black-headed gulls. In winter, the adults lose the black head to a mottled or streaked patern. The laughing gull is so called because of its call, a variety of low chuckles.

Another black-headed gull found in Virginia is the Bonaparte's gull. Its summer plumage consists of a black head, gray back, white undersides, black bill, with red legs and feet. It is somewhat tern-like in appearance, flying with its bill pointed slightly downward. In fall and winter, it loses the black coloring on its head, retaining only a black spot on its cheek. It has a white wedge on the outer, leading edge of its otherwise black wing tip. This flashing of white is very noticeable as this gull flies low over the water in loose flocks, gliding, dangling the legs, then dipping down to the surface to pick up a morsel of food before continuing on.

The largest gull of Virginia waters is the great black-billed gull, or black-back. It measures 28 to 31 inches in length. Its black back offers a strong contrast to a white head, breast, rump and tail. This somewhat formal, uniform-like "outfit" is apparently responsible for local names such as "coffin-bearer" and "minister." Its wings are black too, with white tips and trailing edges. First winter immature birds are mottled brown with dark, dusky brown primaries and banded tail.

This large gull is rarely found inland, preferring coastal marshes and bays, although it will follow large tidal rivers up from the coast. Black-backs are quite predatory as well as being scavengers, feeding on many small birds, animals, aquatic creatures, eggs and chicks of other birds and other birds that may be sick or crippled.

Gulls, in general, are gregarious and gather in large colonies during their breeding season. Frequently they locate their noisy colonies on islands, rocky points or isolated spits of land to protect against land-roving predators. Many naturalists have found that gulls mate for life, seeking new mates only when one dies. The nest is usually on the ground, consisting of a depression, ringed with grasses, sticks, aquatic vegetation or similar debris. Some herring gulls have been known to nest in trees where they make a bulky nest of interwoven grasses, twigs and mosses.

Usually only two or three dark brown, blotched eggs are laid, hatching in 20 to 30 days. Both adult birds share in the nest-building and the rearing of the young. The newly-hatched young are fed regurgitated food. The chicks are capable of running about almost immediately, but usually they stay close to the nest. Frequently, chicks may wander into the territory of another pair of nesting gulls. They are usually put to death swiftly by the stabbing beak of another adult and, often as not, eaten on the spot. Any broken or unhatched eggs are also consumed.

The young gulls are ready to fly in about four to six weeks. Fall is the time of the year in which gull populations are largest. Gull voices form the familiar background music along Virginia shorelines, their calls ranging from soft, melodious calls to raucous, maniacal laughter.There was a time when these calls were in danger of being silenced. Gull's feathers were much sought after by the millinery trade which offered wages to poachers to supply them. In the mid-1800's, gulls' eggs were taken in great numbers by those who considered them a delicacy. Others captured young birds and fattened them in cages for eating.

Today, because of garbage dumps, land fills, and the general increase of trash along our waterways, gulls have increased in number. Modern man's lifestyle has created good habitat, especially abundant food, for the gulls. Pollution-killed fish and wildlife add to the food source. The gull, ordained as a waterways sanitary engineer, expands its populations to do its job for man's benefit. □

mumblers

Hunting or fishing with a chronic mumbler presents new challenges for even the most accomplished sportsmen.

by Charlie Dickey

There are a lot of otherwise sane people who become mumblers when they go hunting or fishing. They are quite talkative outdoors but their volume drops to a low hum. You are positive they're trying to communicate but you never know what.

It doesn't matter how many times you plead with them to speak up, they keep mumbling. I know they are not talking to themselves because they frequently turn to me with a quizzical expression. They expect an answer.

Although I haven't understood a word they've whispered, I've learned to smile and nod in agreement. If their expression demands it, I can shrug like a Frenchman. This usually gets me by.

On the other hand, it can get you the reputation of being the town idiot. For instance, last year I was in the stern of a duck boat with a 25 horsepower motor on the way to the blinds. The mumbler in the bow turned his head partly towards me and slurred some lip movements. I smiled and nodded.

It was not quite daylight but the visibility was good. I kept a straight course down the channel I knew so well. The bow mumbler accelerated and finally turned all the way towards me. He looked at me pleadingly and mumbled something.

I cupped my hands and shouted, "What is it?"

He mumbled some more. I shrugged my shoulders, smiled and said, "*C'est la vie.*"

At that very instant, I became very occupied. We smashed a huge log amidship that was partly submerged in the middle of the channel. The motor shaft broke half in two and the cowling went sailing over the bow. I found myself holding the top half of a motor in my lap, the flywheel still turning.

My companion's fall had been cushioned by a bag of decoys. It was the first time I knew he could talk loudly. In fact, he was screaming, "Blip, blip it, I told you there was a log in the channel!"

It is true that if one engages in certain outdoor activities his hearing is affected. It's accumulative. The hair-like hearing receptors are gradually worn down by outboard motors, chain saws, 4WD's, shotguns, upset wives and other noise makers. I have been around such items a great deal and do not mind admitting that part of my hearing is missing.

In fact, I'm anxious for all outdoor companions to know it. I'm not deaf but simply cannot hear mumblers. Rather I can hear the mumbling but cannot distinguish the words. If there is a competing noise, such as a 50 horsepower motor, I can see the mumbler's lips moving but I cannot understand the words.

What's hard about that? If I'm operating the motor from the stern seat, only a couple of feet from the motor, you'd think the mumbler would have enough sense to increase his volume.

He doesn't! No matter how many times you ask him to speak up, he continues to mumble. Last duck season, I was running the boat back to the dock. Most of the morning had been spent silently waiting for ducks that never came. My buddy hadn't said two words.

But once we started for the marina, he began to mumble. I cupped my hands and shouted, "I can't hear you with the motor running."

"What'd you stop for? I was just wondering where the ducks are."

I cranked the motor and as the boat planed I could see the mumbling starting again. I cut the motor and said, "If you expect a reply to your muttering, you'll have to make it louder. Don't you understand that I'm sitting on the motor and can't hear above it?"

I started the motor but before I could get the boat on the steps he began mumbling. I shut the motor off and we went through the whole thing again. In fact, I cut the motor 33 times before we made it back to the dock.

A week later, I found out that he'd told it all over town that I was the worst boat operator in the state and dangerous to ride with. I couldn't go a hundred yards without cutting the motor.

It's hard to believe how many mumblers there are. Last fall I guided a canoe down a river while a partner shot squirrels with a .22 rifle. He was such a low-decible mumbler that I couldn't make out a word he was saying. When he missed a shot, I tried to look encouraging. When he hit a squirrel, I smiled. He mumbled for two straight hours. When the canoe started sinking, I figured out what he had been trying to say. There was a slow leak.

A couple of years ago, I went duck hunting with Ted, a noted sportsman. As we settled into a two-man blind after putting out the decoys, I said, "Ted, why don't you call the shots?"

A small flock of mallards headed our way and I waited for Ted. Apparently he judged them out of range, because I didn't hear him say anything. Suddenly, he stood up, fired twice and knocked one down. As we paddled out to pick it up, I said, "Ted, could you call the shots a little louder? Like Get Ready and Now!"

A flight of scaup scooted in high and began to circle. Knowing how well scaup will decoy, I figured Ted was going to let them circle closer. I didn't hear a word but suddenly Ted was erect and firing and one of the scaup plopped in the decoys.

A pair of pintails started in and I looked at Ted's lips to see when I should stand up to shoot. Well, he's the worst mumbler I've ever seen. His lips didn't even move, but there he was standing up and scaring those spig off.

I asked Ted if I could call the shooting on the next ducks that came in. He said alright. When a bunch finally came in, I stood up and shot three times and then yelled, "Get ready, Ted, here they come!" □

It Appears to Me

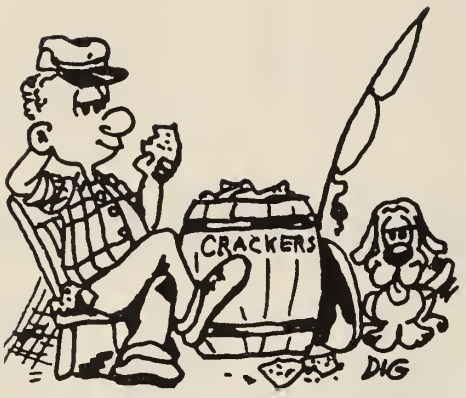
by Curly

. . . A PERSON OUGHT TO HAVE ONE

The United States Environmental Protection Agency (EPA) recently asked the National Wildlife Federation to produce a publication for them, and in the long run, for me and thee. As it turns out, the folks at EPA were aware of the concern that commuters and urban dwellers have about air pollution and basic transportation. They decided to do something about the situation. The result was a 59-page booklet entitled "A Citizen's Guide to Clean Air and Transportation."

The basic thrust of the publication is to get folks involved in helping cities reach some important goals for the 1980's. Goals such as the efficient use of federal transportation funds, clean air and cultural and economic revitalization. David Burwell and Christopher Meyer, tranpsortation specialists with the National Wildlife Federation, authored the publication which addresses issues such as "Is it possible to cut our transportation energy use per capita in half while maintaining our stardard of living? Will downtown areas again bustle with nightlife and commercial activity? And can we clean up the air and maintain high levels of activity?" Messrs. Burwell and Meyer have put together charts, photos, and graphs to help us understand the process and have even done an in-depth section on the use of bicycles for transportation. . . which they conclude also helps keep people in shape. All of this is free for the asking. Just write to the U.S. Environmental Protection Agency, Printing and Management (PM-215) Washington D.C. 20460 and request "A Citizen's Guide to Clean Air and Transportation."

For some time now I have had the feeling that a goodly number of our readers are also map-users. This is based on the number of requests that the Game Commission gets each day for information regarding maps of all types and descriptions. As a map fancier myself, I have had my share of grief with the problems a body encounters in the field or afloat. Maps are easily torn, get wet and for the most part are just not up to the punishment we give 'em. Well, Sir. . . a feller named Martensen has done something about the situation. Marty is a chemist by training and an outdoorsman by choice. He developed STORMPROOF, a liquid which, when



applied to paper products, renders them resistent to water and mildew. Take it from me. . . it works and you would be amazed at what it will do for your "topos" and nautical charts. A pint of Stormproof will treat 100 square feet of paper (about 15 topos), sells for $7.49 and, if you mention *Virginia Wildlife* Magazine, comes postage paid; otherwise you must add $1.50 for postage and handling. It isn't free. . . but it will "free" you from the worry of "mapitess" . . . Martensen Co., Inc., P.O. Box 261, Williamsburg VA 23185.

This next item that I want to mention to you is free. . . however, although it is free, it does take a wee bit of the green to obtain it. The free part is made up of radio waves which are broadcast from six transmitters located in as many locations throughout the Commonwealth. The broadcasts originating at each of these six locations might just contain information which could possibly "save thy skin," Neighbor. The subject is weather and the conditions are broadcast continuously (24 hours a day) giving the situations existent for approximately 40 miles from each transmitter. The broadcasts are updated every six hours. In the advent of a sudden change or the development of severe weather, the broadcasts are updated as often as required to keep the public informed.

Radios capable of receiving these broadcasts are available from a number of different manufacturers and range in design from table models to pocket size. The small size is nicely suited for use by fishermen and hunters as they take a minimum of space, yet provide ample strength for adequate reception.

The stations in Virginia and the frequencies on which they broadcast are as follows: Richmond (162.475 MHZ); Manassas (162.55 MHZ); Lynchburg (162.55 MHZ); Roanoke (162.475 MHZ); Norfolk (162.55 MHZ); Heathville (162.40 MHZ); and Salisbury, Maryland broadcasts on (162.475 MHZ).

Here's one that you members of environmental and conservation organizations might just want to get for reference. It seems that some time ago, a survey was conducted to ascertain just what you and I think about environmental issues. Some right interesting opinions were voiced "by us," such as, 65 percent of us felt that marshes and swamps should be preserved and 73 percent of us felt that endangered species must be protected, even at the expense of commercial activity. Anyhow, the survey gets into some right interesting fields and you and I have given some darned good answers. If you want to learn what "we have said," you and I, request a copy of "Public Opinion on Environmental Issues: Results of A National Public Opinion Survey" from CEQ, 722 Jackson Place, N.W., Washington, D.C. 20006 . . . send a self-addressed mailing label.

. . .FOR YOUR BOOKSHELF

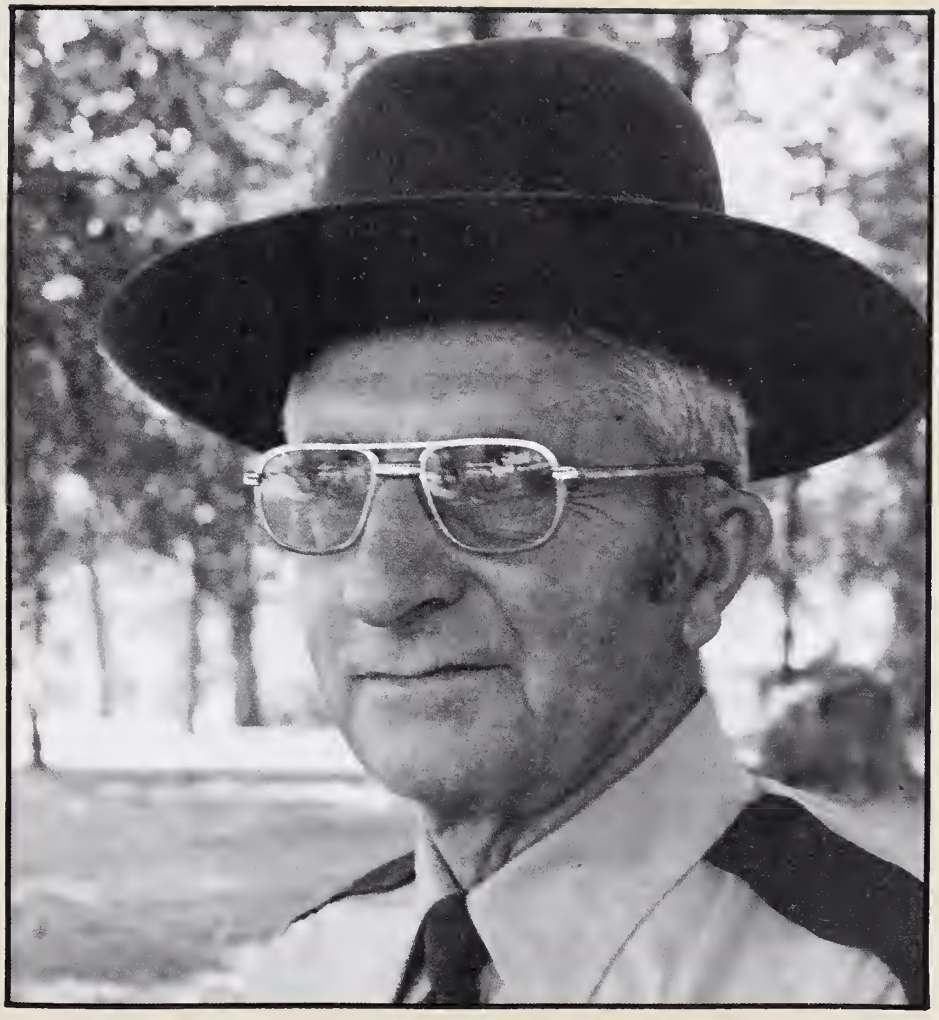
Rodale Press has published a dandy new book which I feel will appeal to all you chefs, whether you are an accomplished gourmet cook or, like me, a mulligan stew meddler. *The Wild Palate* is unlike any cookbook. The menus read like something you would have expected to find in a "Chuck Wagon" on the ole Chisholm Trail. . . i.e., Buffalo in Saffron Broth, Pond Lily Tubers & Greens, Game Liver Soup or Bear Paw Stew. In all there are over 250 recipes, instructions on how to harvest and prepare wild foods, and detailed information about field dressing game. *The Wild Palate* is available from Rodale Press, Inc., Organic Park, Emmaus, PA 18049 for $7.95 in paperback.

. . .AND THEN

"People today are flocking to the outdoors in greater numbers than ever. Yet many come unprepared to find the adventure which nature holds. An appreciation of natural life is a continuing source of interest and enjoyment. It may also provide a bulwark against the threatened destruction of mankind. . ." Monthly Letter, Royal Bank of Canada. □

Personalities

by Francis N. Satterlee



Sergeant Roy A. Smith

Roy Smith was born near Honaker, a rural area in Russell County, Virginia, where he grew up on his parents' 145-acre farm. Reflecting on those early days when, as a youngster, it seemed as though the farm chores were "never done," he remembers it as happy time.

As one of fourteen children, he learned to share out of necessity and to appreciate the good things of life by choice. This appreciation included a deep and long-lasting affection for the outdoors and wildlife.

After being educated in the Russell County school system, Roy attended the Southwest Community College of Mining. In April 1941, he enlisted in the United States Army and spent the next three years in the Panama Canal Zone as a Military Policeman assigned to security duty on the Gatun Locks.

At the completion of that assignment, he was transferred to Europe, was promoted to sergeant, and became responsible for maintenance in an artillery company. This was indeed a memorable experience. During eight months with that outfit, he was constantly in combat, participated in two major battles and was on the front line when peace was declared. Upon being discharged, Roy returned to Virginia and became self-employed.

In 1950, Roy learned of an opening with the Virginia Game Commission and applied for work as a game warden. He was selected for the job and assigned to work in Buchanan County, where he served for 15 years. In 1965, Roy was transferred to Washington County and, on November 1, 1966, was promoted to Area Leader, the position he currently holds.

Roy feels that his experiences and career with the Game Commission have been very memorable, rewarding and a source of constant satisfaction. Highlighting the events over the years have been his work in public relations, teaching hunter safety, and the stimulation of working with youth. One of his greatest pleasures is knowing that, in a small way, he has been influential in guiding these young people in their development into adulthood.

Mrs. Smith is the former Virginia Compton, who is also a native of the Commonwealth. The Smiths belong to the Abingdon, Virginia Baptist Church, where Roy serves as an active deacon. The couple has one married daughter, Renna Cook, and two grandchildren; both families make their homes in Abingdon. □

Sociology of Hunting

Hunting has become not only a conservation issue, but a philosophical one. The author argues the benefits of hunting to wildlife and to society.

by Alan S. Krug

The National Wildlife Federation is the world's largest private, non-profit conservation organization. Its affiliate members, associate members, contributors and supporters number some three and a half million. Among these are hunters, fishermen, bird watchers, hikers, canoeists, naturalists, wilderness enthusiasts, and people with no particular outdoor recreation interest but who are concerned about the quality of our environment.

The federation's membership espouses a wide spectrum of philosophies regarding the conservation and management of our natural resources. This is one of the great strengths of the federation: it has been able to bring all of these individuals under one roof and produce the strongest conservation effort that has ever been mounted by any single organization.

The federation believes that the key to preserving and enhancing wildlife populations is maintenance of a quality environment and management of our natural resources to increase quantity and quality of available wildlife habitat. The federation is convinced that the management of our natural resources should be pursued on a sound, scientific basis, guided by professionals, free from distortion that is the result of misplaced emotionalism.

Such emotionalism regarding recreational hunting seems to be running rampant today. Professional wildlife managers agree that regulated hunting is not only compatible with the overall welfare of the wildlife resource but also, in many cases, it is necessary. As long as hunting is conducted within biologically sound parameters, it is not a conservation issue. It may be a philosophical issue, however, in which case the federation believes that each individual is free to make his own decision. The federation respects the views of its members, whatever those views may be, but says that the claims that regulated hunting as it exists today is harmful to our wildlife resources are based largely on emotionalism, not on fact.

Unfortunately, few anti-hunting groups have chosen to work with conservation organizations in efforts to promote sound wildlife management. Rather, their motto seems to be, "Millions for anti-hunting propaganda, but not one cent for wildlife." Using often misleading statements, half-truths and outright falsehoods, they are mounting well-financed, high-powered public relations campaigns against the hunter and professional wildlife manager.

These groups do not appear to be as interested in the welfare of wildlife as they are in "getting" the hunter. Many of their attacks are not only slanderous but actually vicious. They lack the humane characteristics that one would attribute to the concerned person who is attempting to approach the issue in a reasonable manner. Perhaps this situation is partly due to several leaders of these groups who appear to be primarily engaged in exploiting their memberships and an uninformed public for personal gain. They seem to be more concerned with promoting themselves than in doing anything which might benefit wildlife.

There seems to be a considerable number of anti-hunting individuals who are afflicted with a "hate syndrome" for the hunter. These people have psychological problems and need a convenient outlet for venting their frustrations. The hunter serves this purpose. Another element of the anti-hunting fraternity falls into the category of "intellectual snobs." Their reasoning goes something like this: "Killing wildlife is bad. You hunt and I don't. Therefore, I am an intellectual and you are an uneducated, lower class person." Or, more simply, "I am better than you are."

There are two other categories of anti-hunters. These are the people who just do not have the facts, and the people who do have a factual knowledge but have made a moral judgement that hunting is "wrong." It should be possible to educate the first group so that they can make a more informed decision on the hunting issue.

Lately, some of the anti-hunting groups have raised the level of their arguments and instituted some slick, obviously professionally-guided public relations gimmicks in their anti-hunting campaigns. They put out press releases characterizing themselves as a "conservation organization," even though they have never done anything that could truly be considered a positive contribution to conservation. They spend considerable time and energy attempting to recruit well-known personalities for their cause. They institute lawsuits against government agencies that are involved in the management of wildlife resources. Some of these court actions seem to be chosen with the aim of generating the maximum in publicity.

Gary Gaston

So far, the anti-hunting law suits have been relatively successful. Nevertheless, they have caused those wildlife agencies which are being sued a lot of time, trouble and money, resources that could have otherwise gone for conservation programs. One reason for this lack of success is that no professional wildlife biologist or wildlife manager will testify for the anti-hunters in court.

It's a shame that the anti-hunters don't join with the hunters in furthering the cause of wildlife through sound wildlife management. The hunters have shown that they are willing to work with the non-hunting public. But there is a serious question about whether or not such cooperation would serve the needs of the anti-hunter. It may be that the achievement of their real objectives requires that they maintain a public controversy.

After reading the previous section on anti-hunting sociology, one might think that it has become necessary to defend hunting in this day and age. I would submit, however, that hunting does not need to be defended.

Man has always hunted. American Indians hunted long before the first white man set foot on the North American continent. The American colonists hunted, and American citizens have hunted since the founding of the republic. Hunting is an integral part of many Americans' value systems; it is one of the basic freedoms we enjoy.

The positive aspects of hunting are many. The reasons that people hunt can be placed into three categories: (1) wildlife management; (2) benefits to society; and (3) personal.

Wildlife Management. Hunting can help to prevent over-population of certain wildlife species. Over-population often results in numerous deleterious effects on our wildlife and human resources, including the following: (1) starvation of wildlife; (2) deterioration in the physical condition of wildlife; (3) increase in parasitism and disease among wildlife; (4) undesirable alterations in reproductive physiology in certain species of wildlife; (5) damage to wildlife range and habitat; (6) costly damage to farm crops; (7) interference with proper forest management and regeneration of desired tree species; (8) increases in property damage caused by wildlife; (9) increases in personal injury and damage to property resulting from motor vehicle accidents which involve wildlife; (10) increases in nuisance aspects of wildlife, such as raccoons in the garage, squirrels in the attic, groundhog holes in the middle of farm fields, and foxes in the chicken house; (11) an increase in the incidence of wildlife disease which is transmitted to man or pets, including rabies and distemper; and (12) an increase in various isolated, undesirable effects of one wildlife species on another.

Benefits To Society. (1) Utilization of wildlife for food; (2) utilization of wildife hides, furs and other by-products for a wide variety of goods; (3) hunter expenditures which are a significant component of consumer demand and thus have a stimulative effect on the general economy; (4) hunter expenditures which are a very important source of "external income" for certain regional economies; (5) generation of a major part of the funds currently available for wildlife research, management, protection and land acquisition through hunting license fees and excise taxes on sporting firearms and ammunition; (6) the stimulating of hunters' interest in a wide variety of conservation problems and issues through recreational hunting — hunters continue to provide conservation leadership in many areas; (7) hunters' year-round interest and concern for wildlife which aids wildlife law enforcement efforts — hunters report many wildlife law violations and often assist conservation officers in making arrests; and (8) the importance of hunting to the nation's small arms industry, one of our vital national defense elements. Hunting is an American tradition and an important part of our national heritage and way of life. Hunting involves values we don't want to lose.

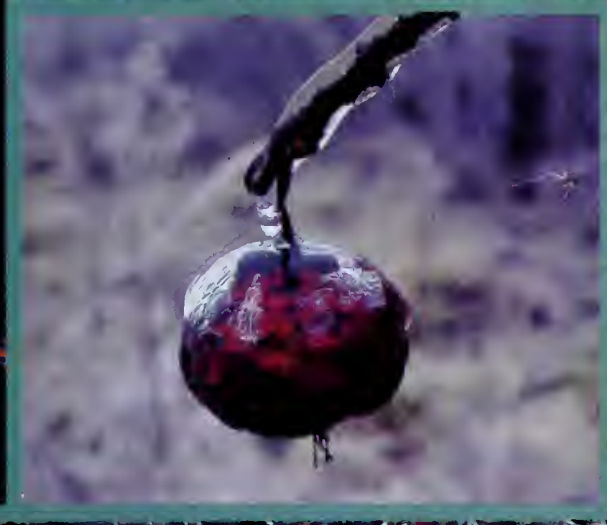
Personal. (1) Hunting and taking game provide an individual with a unique opportunity to interact with nature, to become an integral part of nature's ecological processes; (2) hunting provides continuous opportunities for a wide variety of nature-education experiences; (3) hunting is not only good physical exercise but is also a means of refreshing one's mind and spirits; (4) hunting is a lifetime sport and can be enjoyed year-round; (5) participation in hunting activities can occur alone and with a minimum of special equipment; (6) hunting develops outdoor abilities and self-reliance; (7) hunting is tops for developing and enjoying good parent-child relationships; (8) hunting offers the opportunity for enjoying good fellowship; and (9) hunting is enjoyable. □

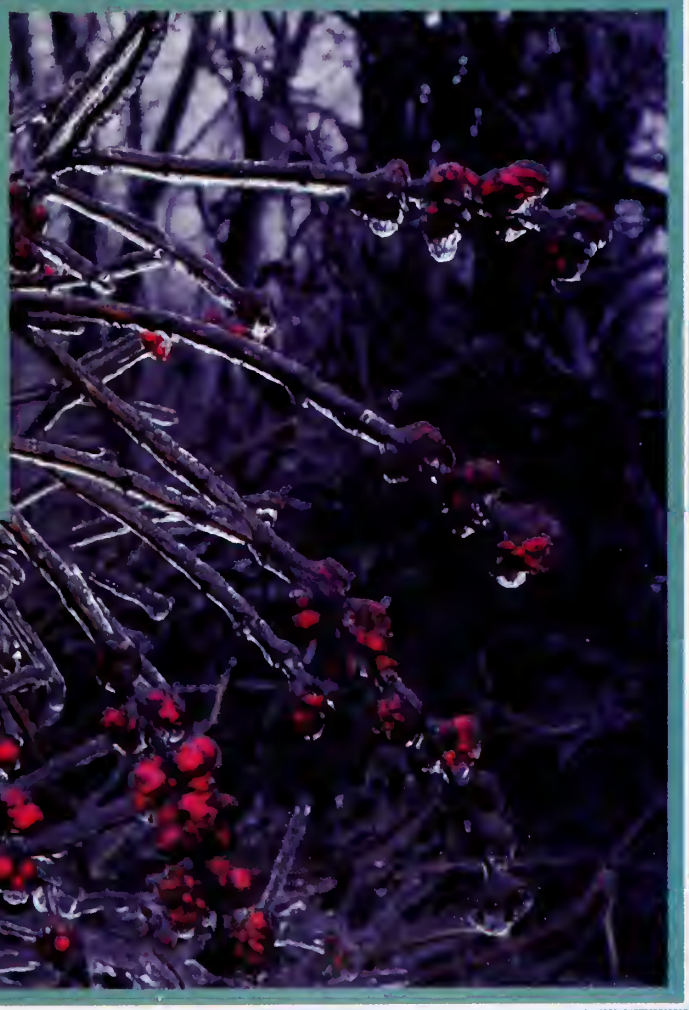
Glistening Woodlands

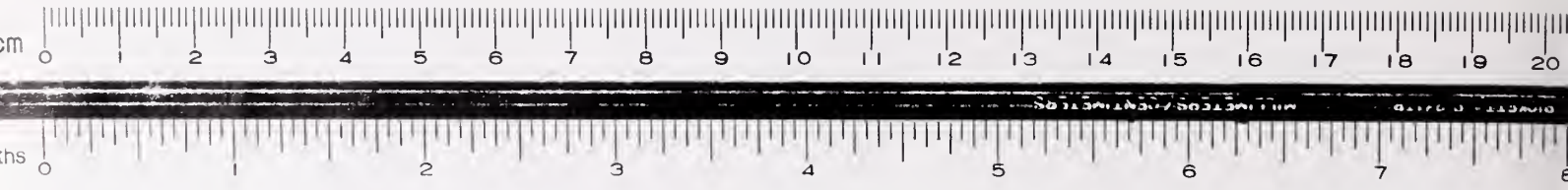
A Photo Essay

by Dinny Slaughter

Winter brings not only the promise of graceful snowflakes, it also brings freezing rain with its ethereal and beautiful effects on the woodlands, as shown by photographer Dinny Slaughter on these two pages.







How Many Kilograms In A Killadeer?

If you don't know that the trout limit is 30.48 centimeters, it's time for a metrics lesson.

by Bill Weekes

You're a hunter. It's five or 10 years from now. You and your buddy are taking a short hunting trip in quest of a trophy buck or two. You're driving your pickup, maybe your camper, either of which probably gets about eight kilometers to the liter. You're lucky: your hunting grounds — several thousand hectares of national forest land — are nearby, maybe 50 or 60 kilometers away.

It's still dark. The air is cold and crisp, the temperature somewhere between four and 10 degrees Celsius (or centigrade). You're thinking about the big buck you're going to get. You take out a 100-millimeter cigarette and strike a match. The 182.4° C. flame ignites the cigarette and you continue to daydream.

Keeping to the legal speed of 88.5 kilometers per hour, you finally reach your destination. You and your friend pile out of your vehicle. You grab your 3.4-kilogram shotgun as dawn begins to break, and you stalk off into the woods. You wait near a trail you surveyed weeks before. An hour passes. Finally, you spot a buck coming up the trail. Suddenly it stops 35 to 45 meters from the tree which is concealing you. It sniffs the air.

Your shotgun is loaded with No. 00 buckshot. Each pellet measures a diameter of 8.38 millimeters (mm). The pellets are packed in a 6.98 centimeter (cm)-long cartridge.

Slowly you raise your gun. You look down a 71.1 cm-long barrel. The deer stares fixidly into a bore 1.85 cm in diameter.

You fire. The buck dances for a second before plopping dead. You go to the weighing station where you discover you have harvested a buck that has tipped the scales at that magic number — 90 kilograms. The buck dresses out at 70 kilograms. You the hunter have met the challenge.

A different challenge will be greeting sportsmen during the next ten years. The nation is going metric. Long distances will be measured in kilometers, shorter distances in meters and even shorter distances (or lengths) in millimeters and centimeters. The chief unit for weights will be kilograms for heavy things and grams for light things. Areas will be expressed in square meters or hectares (ha) while volumes (also referred to as capacities) will be in kiloliters or liters.

But to game managers and wildlife researchers, and to the pros of the scientific world, the metric system is old stuff, almost 200 years old.

METRIC CONVERSION CHART

	Given the number of	To get the Number of	Multiply by the factor of
LENGTH:	Inches	centimeters (cm)	2.54
	Feet	decimeters (dm)	3.05
	Yards	meters (m)	0.91
	Miles	kilometers (km)	1.61
	Millimeters	inches	0.039
	Centimeters	Inches	0.39
	Meters	yards	1.09
	Kilometers	miles	0.62
AREA:	Acres	hectares (ha)	0.40
	Hectares	acres	2.47
WEIGHT:	Grains	milligrams (mg)	64.8
	Ounces	grams (g)	28.3
	Pounds	kilograms (kg)	0.45
	Milligrams	grains	0.015
	Grams	ounces	0.035
	Kilograms	pounds	2.21

EXAMPLES:
12″ bass limit = 30.48 cm
3″ shell = 7.62 cm
6′ rod = 1.828822 m
14′ boat = 4.267 m
12-lb. test line = 5.443 kg
8-lb. bass = 3.628 kg

Although the metric system may be old hat to the scientific world, sportsmen will have to make an adjustment. No longer will the legal limit for trout, for example, be 12 inches (in some states), but rather 30.48 cm. A 20-pound minimum for a killed black bear will become a 45 kg minimum. A bow will no longer be required to shoot an arrow 125 yards, but 114 meters. With primitive weapons, 50 grains of black

powder per load as a minimum requirement will now become a 3.24 gram minimum load.

In rifling matters, the diameter of the bore of a rifle is measured in hundredths of an inch and is termed the rifle's caliber. Hence, calibers such as .22 and .30 are 22/100th and 30/100ths of an inch, respectively. In Europe and Asia, however, calibers are measured in the metric millimeter already, so that the .22 and .30 caliber become 5.59 mm and 7.62 mm, respectively. Perhaps, when this country goes metric completely, manufacturers will make rifle bores of a whole millimeter size (like 6 mm and 8mm).

Those sportsmen who are cooking buffs also will have to start thinking metric. They will need to know how to convert degrees Fahrenheit to degrees Celsius. The Celsius scale runs 100 degrees from freezing (0 degrees C.) to boiling (100 degrees C.). The respective Fahrenheit temperatures are 32 and 212, or 180 degrees overall. The Celsius degree, thus, is larger than the Fahrenheit degree — 1.8 times larger. To convert: degree C. = degrees F. — 32 (0.556); degrees F. = degrees C. (1.80) + 32. Example: (1) Bake your trout at 232 degrees C. for an hour. (2) Bake your venison at 135 degrees C. for 3 to 5 hours. Work out the answer for yourself, if you have a Fahrenheit stove.

The sportsman must not only have an idea on how to convert from the British to the metric system, and vice versa, but he should have a good working knowledge of how to figure equivalents *within* the metric system itself. How many millimeters in a centimeter? How many decimeters in a kilometer? Meters in a kilometer? Grams in a kilogram?

To convert units within the metric system, the sportsman must first focus on the chief units (and know them). For length the chief unit is the *meter* (1.09 yards; for weight, the gram (28.39 per ounce); in area, the *square* meter (1.2 square yards). Next, he must learn the metric prefixes: "milli" (1/1000th), "centi" (1/100th), "deci" (1/10th), "deka" (10 X), "hecto" (100 X), and "kilo" (1000 X). For example, a millimeter is 1/1000th part of a meter, while a kilometer equals 1000 meters.

Listed below are the metric scale equivalents for the meter (or for the gram, substituting the suffix "gram" for "meter"):

1 kilometer = 1000 meters
1 hectometer = 100 meters
1 dekameter = 10 meters
1 meter = 1 meter
1 decimeter = 1/10 meters (or .1 m)
1 centimer = 1/100 meters (or .01 m)
1 millimeter = 1/1000 meters (or .001 m)

Because the metric system is a system of decimals (or tenths), one can easily convert one unit to another by simply moving the decimal point right or left, depending on whevther one progresses down or up the metric scale. A few examples should suffice. How many millimeters are there in seven centimeters? One goes from centimeters (the known quantity) to millimeters (the quantity in question), that is, one moves *down* the scale one unit. Therefore, one moves the decimal place to the *right* to get 70.0 mm as the answer. How many kilometers are in 17 decimeters? Start with 17 decimeters and move up the scale to destination kilometer, a total of *four* units. The answer is .0017 km, because one moves the decimal point *four* places to the *left*. Down, right; up, left.

Other examples:

78.6 mm = 7.86 cm (up, left)
34.14 km = 34,140,000 mm (down, right)
165.43 dkm = 16,543.0 dm (down, right)
468.3 cm = 0.04683 hm (up, left)

But just where does this "new" metric system come from anyway? And what good is it?

In 1790 the metric system was devised by members of a special committee appointed to do the task by the Paris Academy of Science. Metrics proved to be a radically different system of weights and measures: wholly rational, simple and internally consistent.

Where did the meter come from? In the old British system, the yard evolved as the distance from the tip of some king's nose to the tip of his fingers of an outstretched arm. The meter, which turns out to be 1.09361 yards, was fixed originally as one ten-millionth of the distance from the North Pole to the equator. In recent years the meter was redefined as 1,650,763.73 wave lengths in a vacuum of the

orange-red line of the spectrum of krypton-86.

In 1799 the metric system became legal in France, becoming compulsory there in 1837. Henceforth, the system began to spread throughout the world as the official system of weights and measures. The United States is about the last nation to even consider total conversion. From our nation's beginning advocates — such as Washington, Jefferson, John Quincy Adams — have unsuccessfully tried to get us converted. However, the metric system was finally made legal in the U.S. in 1866, and in 1893, the Bureau of Standards in Washington adopted the metric system as the standard in legally defining the yard and the pound. Sputnik in 1957 pushed the U.S. into becoming more scientific-minded and during the 1960's laws were enacted and money appropriated for the study of the metric system and the feasibility of conversion in this country. In August 1972, the Metric Conversion Act called for the implementation of the system over ten years. The Act didn't pass the House, but two years later Congress appropriated money to get the conversion underway. In 1975 the Metric Conversion Law authorized the U.S. Government to plan for conversion and the U.S. Metric Board was set up to aid in this transition.

Working in the metric system is easier, simpler, and more convenient than working in the British system. One advantage is in measuring and weighing small and light items. The weight of an adult red fox eye lens may be taken as an example. The weight (according to one piece of research) is 277 milligrams. This is .009695 ounces in the British system. Which number is easier to pronounce, record, and remember: a number with a decimal (or fraction), or a whole number? Convert the above weights to a larger denomination: pounds and grams. The conversion reads 0.0006059 pounds and .277 grams. In which system does conversion appear easier? While the metric system has some intermediate standards between milligram and gram, the British system has no intermediates between ounce and pound. The 277 milligrams could also be recorded either as 27.7 centigrams, or 2.77 decigrams. All one needs do is move a decimal point and change a name (prefix).

The metric system is also internally consistent. Were one speaking of 277 millimeters or 277 milliliters, conversion would take place the same way (centimeters, decimeters and meters; and centiliters, deciliters, and liters). Being able to measure very small and very light items in easily readable standards makes the metric system extremely convenient. □

HUNTER'S VITAL STATISTICS

GAUGE	SHELL LENGTH		POWDER		SHOT	
	Inches	CM	Drams	Grams	Ounces	Grams
12	3½	8.89	5	17.7	2	56.6
12	3	7.62	4.5	16.0	1⅞	53.1
					.875	
12	3	7.62	4.25	15.0	1⅝	46.0
					.625	
12	2¾	6.99	4	14.2	1½	42.5
12	2¾	6.99	3¼	11.5	1¼	35.4
12	2¼	6.99	3¼	11.5	1⅛	31.8
					.125	
12	2¼	6.99	3	10.6	1	28.3

ANGLER'S VITAL STATISTICS

SINKERS		LEADERS			
		Diameter		Strength	
Ounces	Kg	Inches	MM	#Test	Kg
1	28.3	.008	.031	1	.45
2	56.6	.018	.039	2	.9
3	84.9	.012	.046	4	1.8
4	113.2	.014	.055	6	2.7
5	141.5	.015	.059	8	3.6
6	169.8	.017	.066	10	4.5
8	226.4	.019	.074	12	5.4
10	283.0	.021	.082	15	6.75
12	339.6	.023	.090	20	9.0
16	452.8				

Growing Up Outdoors

by Sarah Bartenstein

Why Do Animals Do What They Do?

Mealtime for Wildlife

Leonard Lee Rue III

In climates where it is nearly impossible for woodchucks (or groundhogs) to find food, they hibernate. Here is a woodchuck emerging from its burrow.

When it's your mealtime, what do you do? You probably do little more than sit down at the table, pick up your fork, and eat. Your mother probably shops for the food, then prepares it for you — perhaps with some help from you and other members of your family. All in all, it's a relatively simple thing.

But what about animals? Last month, we learned that it is so difficult for some animals to find food during the winter that they have to sleep the cold months away, or at least limit their activities to conserve their body heat.

We take a great deal for granted, don't we?

The state of Virginia conducts programs to help wildlife. These programs however, cannot insure that wildlife will be well fed. People cannot *completely* manage environment. Too many factors enter into meal-getting for wildlife. Some of these factors are drought, flood, snow and the very physical structure and limitations of some animals.

Different animals manage with their body equipment to secure food in different ways. Some climb, some leap, some swim. Nature itself determines survival. For instance, seed-eating birds often starve in winter when they cannot find seeds. Whatever the problems, no animal simply sits down at the table and eats!

An opossum must climb in search of food, wrapping its tail around the branch of a tree, and hanging on while he reaches for food.

Some birds fly over water, zoom down, grab fish and swallow them. Eagles, hawks and owls use claws to tear at mice, rabbits and other small animals they have found to eat.

Muskrats and squirrels have sharp teeth which help them eat hard objects. The squirrel's extremely sharp teeth enable him to open very hard nuts.

The muscles of a snake help him to eat. His mouth muscles can stretch wide enough to allow him to swallow pieces of food that are far larger than his mouth. I have seen a snake snatch a mouse or a hen egg in one swift thrust, and with a mouth no bigger than a rosebud.

The moth's tongue is long. It unrolls and sips nectar from flowers. The preying mantis has long, powerful front legs especially fitted to hold on to grasshoppers, caterpillars and other insects. He uses these front legs as hands.

Speaking of hands, think what a chore it would be to eat without the use of them, as four-footed animals must do. Watch your own dog. Imagine having to lift food without the benefit of your hands!

Turtles have no teeth but have strong jaws with sharp, efficient cutting edges. Mountain goats leap in pursuit of food, and their trials in search of dinner are often difficult.

Woodchucks hibernate in deep burrows from October to February. Until gardens and wild plants emerge, they have a most difficult time finding enough to eat.

Although there are some large mammals which no longer exist in Virginia, we still have deer and the smaller animals such as the fox, raccoon, muskrat, woodchuck and some beaver. We do not want them to disappear from the scene. Whereas our state gives robust effort to prevent this, wildlife meals are for the most part the responsibility of the animals involved. All of them must exert themselves to eat.

Have you ever seen an overweight fox or woodchuck? Probably not, since finding their no-so-easy meals is a workout!

Our guest author this month is Dorothy Beecher Artes of Indian Head, Maryland.

Gourmet Game

Some delicious ways to cook ducks and geese

by Joan Cone

Wild ducks and geese are among the most beautiful wildlife in Virginia. They also provide some of the best eating — otherwise, why would hunters arise at 3:00 a.m., sit in a cold, wet blind for hours just to bag a few of these fast fliers?

Care has to be taken with this group of waterfowl, just like any piece of game, in order to assure a gourmet's delight.

After the day's hunt, ducks and geese should be dressed out immediately. I find it best to split the ducks up the back with a good pair of kitchen shears and remove all the insides. Save all livers and hearts as they're delicious sauteed in butter with eggs for breakfast. Or, if you prefer, you can make marvelous pate with them.

It is vital that you remove all blood from the duck or goose cavity and wash it out well before freezing. Very important, too, is the proper wrapping for the freezer so you don't lose your precious game to freezer burn! I find that the safest way is to put each duck in a plastic freezer bag and then put it in another plastic bag. Be sure these are freezer bags and not thin, storage ones. Freezing ducks in water is excellent, too, but again, use two heavy freezer bags. Large geese should be double-wrapped in good freezer paper, and all seams should be sealed with tape.

Waterfowl, like most wild game, have a tendency to be dry, so care must be taken not to dry them out during the cooking process.

You'll find that some ducks are lean, while others have much more fat on them.

For large ducks which are not too fatty, try roasting them wrapped in aluminum foil. This method keeps ducks moist and the oven clean!

ROASTED DUCK WITH HONEY

1 mallard or similar type duck
1 teaspoon salt
1 teaspoon ginger
1 teaspoon ground hasil
¾ cup honey
¼ cup butter or margarine
3 tablespoons orange juice
2 teaspoons lemon juice
1 teaspoons orange peel
⅛ teaspoon dry mustard
⅛ teaspoon salt
1-2 oranges
cornstarch

Clean duck and dry thoroughly inside and out. Combine 1 teaspoon each salt, ginger and basil; ruh half of mixture on inside of duck. Heat honey, hutter, orange juice, lemon juice, orange peel, mustard and ⅛ teaspoon salt together until butter melts. Rub 2-3 tablespoons on inside of duck. Slice unpeeled orange in ½-inch-thick slices and stuff duck with as many as possible. Pour 4-5 more tablespoons of honey mixture into duck. Truss duck and rub remaining seasoning mixture on outside. Place bird on a large piece of aluminum foil and pour remaining honey mixture over duck. Bring up foil around duck and seal edges with double fold. Roast in a 425° F. oven for 1¾ hours. Unwrap, baste with drippings and bake 10-15 minutes longer or until brown. Place duck on a hot platter to keep warm. For gravy, pour drippings into a small sauce pan and thicken with cornstarch dissolved in small amount of water. Yield: 2 servings.

The next recipe was developed by our son, who is a chef. By using oven cooking bags for waterfowl, game will brown, never dry out, and a delicious gravy results from the cooking process.

ART'S ROASTED WILD GOOSE

1 wild goose
1 apple, quartered
1 onion, quartered
¼ cup flour
1 cup natural apple juice or cider
1 cup white table wine — Rhine or similar type
1 bay leaf
5 whole black peppers

Preheat over to 375° F. Place apple and onion quarters in cavity of goose and truss. Add flour to a 14" x 20" Brown-In-Bag and shake. Place bag in a 2" deep roasting pan. Add juice and wine to bag along with bay leaf and pepper. Stir contents of bag with a wooden or plastic spoon until well blended. Place goose in bag and close with tie. Make 6½-inch slits in top of bag. Roast for 2-2½ hours or until tender. If goose needs more hrowning, then split hag up the middle and expose breast of goose. Strain gravy and remove grease. To thicken gravy, add cornstarch dissolved in water. Season with salt to taste. If a sweeter gravy is desired, add some currant jelly and some ground cloves. Gravy can also be darkened by using Gravy Master or Kitchen Bouquet. Note: Two large ducks may he substituted for a goose in the ahove recipe. Roast for 1½ to 2 hours.

Although this next recipe is for sea ducks, it can also be used for 2 medium or 3 small, very lean wild ducks. Split these ducks in half, though, before placing in slow-cooking pot.

SCOTER DUCKS IN SLOW-COOKING POT

4 to 6 skinned scoter breasts
salt
½ cup orange juice
¼ cup Port wine
1 tablespoon soy sauce

Spike Knuth

Roasted duck with honey is the basis for a delicious meal.

1 teaspoon grated orange rind
½ teaspoon ginger
¼ cup honey

Soak skinned scoter breasts in salt water for an hour or two unless you plan to freeze them — then do not soak in salt water. Salt breasts and place upright inside slow cooking pot. Mix all ingredients together and pour over duck pieces. Cover and cook on low for 8 to 9 hours. Don't be alarmed if you notice an odd odor during the cooking process. This means that by the time the breasts are cooked, the strong, natural flavor of these ducks will have escaped during the long, slow cooking, and you'll find these scoters delicious eating. Allow one breast per person.

The best way to get more mileage from your game is by using leftovers. This is a way to have a delicious, nutritious soup thick enough to use as the basis for a complete meal.

DUCK BARLEY SOUP

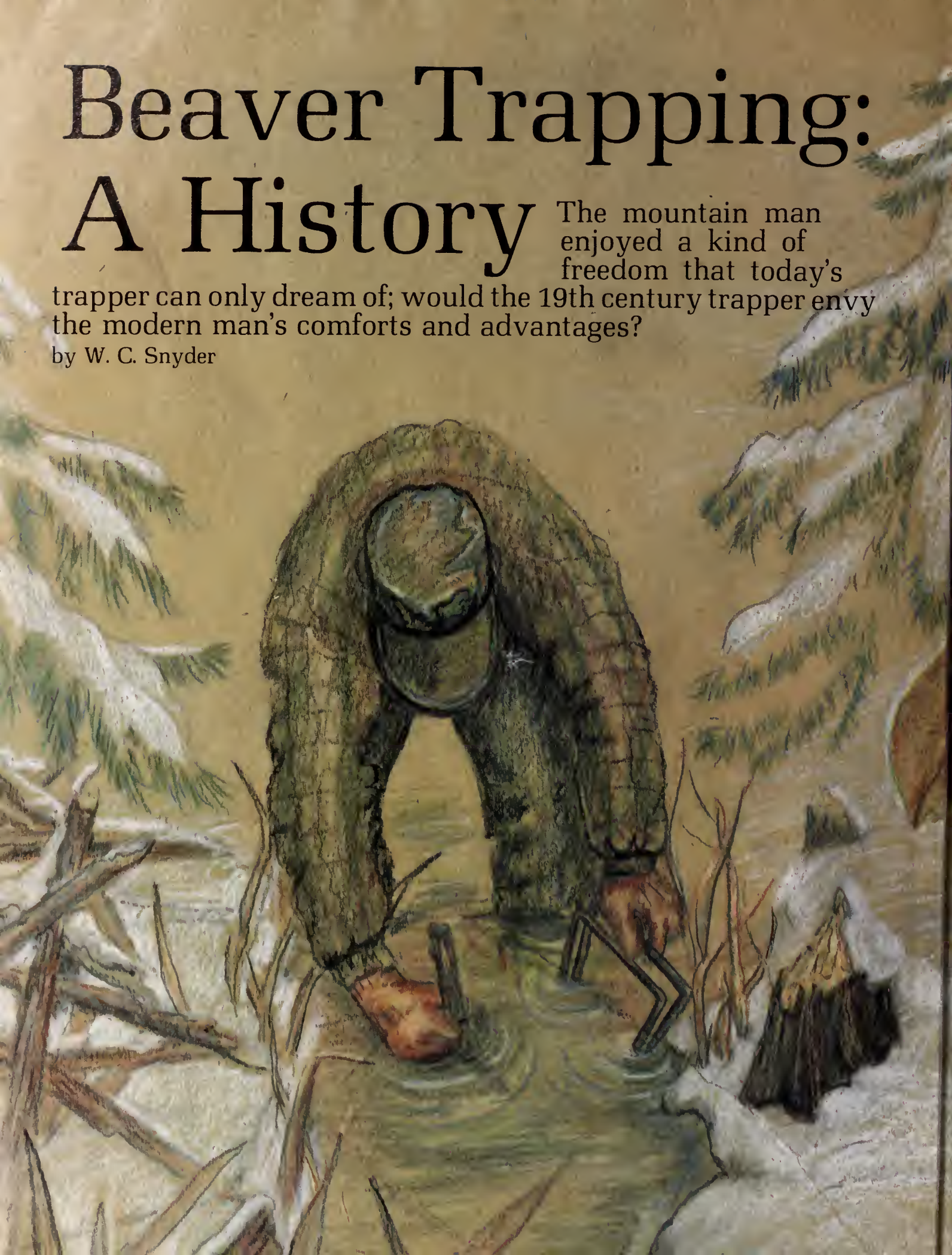
leftover and carcass from wild ducks or a goose
1 can (16-ounces) tomato sauce
3 quarts water
3 carrots, sliced
3 stalks celery, cut into ½ inch pieces
2 teaspoons instant minced onion
½ teaspoon pickling spices
¾ cup barley
salt to taste

Place all ingredients into a deep pot and let simmer for 6 to 8 hours until barley is done and meat comes off carcass easily. Remove meat from carcass and return to soup. Season to taste. This soup can be prepared on the stove or in an electric slow-cooking pot. □

Beaver Trapping: A History

The mountain man enjoyed a kind of freedom that today's trapper can only dream of; would the 19th century trapper envy the modern man's comforts and advantages?

by W. C. Snyder



The mountain man who trapped for beaver in the streams and lakes of the Rockies played an important part in the Westernization of our country. He and fellow trappers were the vanguard that broke a trail from the east across the western plains and mountains and on into Oregon. The lodestone they searched and hunted was beaver and established records indicate the acquatic animal was found and taken in quantity. Estimates of the number of beaver caught range from 10 to 60 million and it is known that from 1853 to 1877 the Hudson Bay Company handled more than three million pelts by itself. Like his later counterpart, the American cowboy, a few short pages in history name the men of the mountains and tell of their independent lives.

In general the mountain man was a loner, seldom trapping with more than two partners. On journeys to and from trapping country or on the way to a rendezvous to sell fur and seek recreation, he would travel with a group, but this action was taken as a precaution against Indian attack.

From 1800 to 1850 there were probably never more than 1500 professional trappers in the Rocky Mountain area. They were hardy men, skilled in all phases of woodcraft and self-preservation. A successful mountain man had to be a good shot, know the habits of wildlife and know how to skin, clean and dress the hides of furbearers he caught. With the exception of minute amounts of flour, sugar and salt, meat was the staple diet, so it was necessary to have the skill to stalk, kill and butcher game animals. A mountain trapper was skilled with a knife and if necessary, could repair a gun. He was a linguist, having a rudimentary knowledge of Spanish, French-Canadian and the various languages of the Plains and Mountain Indian tribes. Lastly, he was an expert in sign language.

Trappers of this era travelled lightly. Generally, basic equipment consisted of a mustang or burro to ride, saddle, bridle, saddle blanket, a couple of buffalo or bear robes, rifles, powder horn, knife, and light hatchet. A weather-proof bag contained small items like sugar, coffee, sewing kit and extra moccasins. Six crude, homemade steel traps, weighing about five pounds each and a supply of castoreum (beaver scent) made up each trapper's supplies that must last from the latter part of August to April.

Because of extremely severe winters, trapping for beaver was carried on in early fall and spring. at this time, streams were unfrozen but still bitterly cold. When a spot was found that showed beaver signs, a primitive camp was set up. Such a shelter was probably made of spruce branches and covered with a buffalo robe or tanned bear skin. Caves were also used when found in the vicinity of trapping grounds. The men slept in their clothes and under animal skins to stay warm. In Indian country, a fire was a luxury after dark unless it could be concealed in the cave or a downfall or timber. Even then it was risky because of the smell of woodsmoke that could be detected from a long distance.

If two men were in the party, each would take one side of a stream to place traps. The men often waded in water waist high to aid in placing traps. Traps were placed on or around feed beds and lodges and sticks dipped in the smelly castoreum were placed close by to attract the furbearers to the traps. Early each morning the grizzled trappers checked the traps and any catch was skinned on the spot. Back at camp, the skins would be cleaned of all fat or sinew and stretched on round hoops, handmade from small willow or ash branches. Occasionally trappers would have an Indian squaw with them who performed this task and otherwise made herself useful around camp. More often, it fell to the individual to take care of his own fur. When dry, the skins or "plews" were folded fur side in and

Beaver have been the mainstay of American trapping for over 200 years.

stored in packs. A standard pack consisted of 80 hides.

At best, beaver trapping was a hazardous occupation. Steady wading in the frigid waters soon brought on rheumatism and arthritis and drowning in a deep hole was not unheard of. Grizzly bears were plentiful and often attacked with no provocation, and Indians, fiercely protecting their homelands and on the lookout for scalps, were a constant menace. Starvation, quicksand and frostbite were other dangers to be guarded against.

By the beginning of the 20th century, beaver in the eastern portion of the country had nearly been exterminated. Destruction of habitat and overtrapping were the primary reasons for this tragedy. Fortunately, some Game Commission personnel quickly noted the problem and took steps to rectify it. Beaver were brought from distant states, turned loose in protected areas and stringent laws were passed to protect the valuable furbearer. The effort was successful and beavers are so plentiful today that in some localities they constitute a nuisance.

The beaver trapper of today does not endure the hardships of the early mountain man. Modern man wakes up in a warm house that is a permanent shelter. Instead of an open campfire, heat is generated from oil, electricity or wood and coal. Dry clothes are at hand and often thermal or insulated underwear are worn beneath heavy pants and shirt. An insulated jacket or foul weather gear ensures warmth in cold weather and dryness in inclement weather. Footwear is not the buckskin moccasins and leggings that had a tendency to harden when dried. Instead, rubber boots or chest high waders, completely waterproof, are used.

When trapping a large pond, the mountain trapper sometimes took time to construct a small raft from logs and strips of buckskin or heavy fibres. More often he waded the chilly waters to set traps or to retrieve trapped game. Today, lightweight aluminum boats, transported to a beaver pond in a heated four-wheel drive vehicle or pickup truck provide safe and easy means of tending traps. Such a boat can easily be handled by one man and eliminates the need to wade in unknown waters. Traps set for bank-living beavers can be checked on foot but even then, the chances are that transportation is not too far distant.

The clumsy, homemade beaver traps of the middle 1800's were leg or foot hold traps. They were set so the trapped animal could get to deep water where it drowned. A small stick attached to the chain would float to the top of the water to locate the trap and its prey. This practice resulted in the saying "That's the way my stick floats," to indicate the mountain trapper's direction or manner of thinking.

Today, some trappers still use leg hold traps but most use the ten-inch, square-jawed Coni-bear style trap. This trap eliminates the need for a drowning set and is favored because it either catches or misses its prey. Animals are not crippled and the strong trap has an impact that kills nearly instantly. With the use of truck, boat and waders the trapper of today can set and take care of many more traps than his predecessor.

Trappers of the Rocky Mountains and Plains had to always be wary of attacks from hostile Indians. On the Plains, Pawnees and Arapohoes were warlike by nature and in mountainous areas, the Oglala Sioux and Blackfeet were dreaded even more. The Blackfeet in particular resented the intrusion of white men and were constantly on the warpath against them.

Modern trappers have no such worries. Game wardens on duty tours occasionally stop a trapper for a license check. A serious law infraction could possibly result in arrest but this hardly constitutes a hazard. Trap and fur thieves are a nuisance but confrontation with them is seldom dangerous. Ferocious animals are a thing of the past so if the trapper today can protect himself from drowning or bodily injuries like broken legs or sprained ankles he is exposed to no really dangerous situation.

Finally, when he returns home with beaver to skin, the chances are the chore will be performed in a small outbuilding heated with a wood or a kerosene stove. A handy table and superior knives facilitate the task of removing the fur and ridding it of excess fat. A section of plywood, cut to suit, and a hammer and short nails made stretching the hide a snap as compared to homemade hoops and strings of buckskin.

The mountain man trapper, while he lived, enjoyed freedom that was unsurpassed. He was subject to no law except that of survival, and he had the satisfaction of travelling in country that had never seen the footprint of a white man. His was a new world, unending and satisfying.

Trappers of today have many advantages and all the niceties that make living worthwhile, but it is extremely doubtful that the early mountain man would have exchanged lots. As Milton wrote in *Paradise Lost*, "The world was all before them, where to choose their place of rest and Providence their guide." □

Outdoor Notebook

A Child-Sized Magnifying Glass

When was the last time you let a child-sized magnifying glass take you for a walk?

That's right. Take you for a walk. Outdoors. In nature.

You'll find out — if you haven't already — that it's very enlightening for an adult to take a nature walk with a two-to-four-foot-high magnifying glass that has two wondering eyes for lenses, two tireless legs for running and stooping and kneeling, two ever-exploring hands for finding and feeling — and an ingenious little mind for truly perceiving.

We farsighted adults may see the forest, but our shortsighted kids teach us to see the trees. And more.

They teach us to see bare branches and twigs as skeletons, or, fully-clothed in painted leaves, as dressed-up ladies going to a fancy masked ball.

They teach us to reach out and feel, as well as see, the difference between the ridged, rough surface of the persimmon tree's bark and the papery, smooth texture of the birch tree's wrap.

They teach us to notice and to finger the many-sized cones of evergreen trees, to venture the prick of nature's needles and nettles, to test the sponginess of moss, to taste falling rain or snow, and to listen to wind whispering secrets through the trees.

They teach us to tip the "elf's cap" off the mighty oak's seed, to kick up leaves gleefully in the fall, to investigate groundhog holes, and to catch a "baby helicopter" the winged maple seed spiraling to the ground.

They teach us — in one distilled moment — what is beautiful and worthwhile in life: a child, eagerly gathering handkerchief leaves to his breast, suddenly stops. He has discovered a prize — a large scarlet leaf, a brilliant silk handkerchief compared to all the rest. Holding it up as an offering in the palms of his hands, he exclaims, "This one is worth a lot!"

When we let a child-sized magnifying glass take us for a walk, we re-discover that little things are big, commonplace things are fun, and what we quite often take for granted in nature — even the child — is utterly beautiful, and "worth a lot."—*Martha Giles Earles* □

Don't Give Up On Drowning Victims

Previously it was thought that anyone under water longer than four minutes suffered irreparable brain impairment. However, a study sponsored by the National Oceanic and Atmospheric Administration at the University of Michigan showed that often, persons believed to be beyond assistance can be revived and can recover without brain damage. In one instance, Michigan researchers found this to be true with a victim who had been submerged 38 minutes.

The Michigan study concluded that they key to saving a potential drowning victim is aggressive and sustained resuscitation. Water temperature is an important factor in reviving drowning victims. Those who had been pulled from water with temperatures below 70 degrees F. had a better chance of being revived.

A review of 25 cases also showed that 20 victims who had been submerged for more than five and one-half minutes in water colder than 70 degrees recovered fully when given immediate attention and continuous resuscitation. The victim who had been below water 38 minutes was one of these. The researchers found that when victims fall into cold water, changes occur in the body's metabolism, and all oxygen remaining in the system automatically goes to the heart, brain and lungs. This reflex, known as the "mammalian diving reflex," is a phenomenon peculiar to mammals.

NOAA said the Michigan researchers emphasized that drowning victims often appear dead when they are not. Therefore, they urged that resuscitation be begun as soon as possible, using any of the standard techniques taught by the American Red Cross, the Heart Association and other organizations. Resuscitation should be continued as long as the administering party is physically able to do so, or until medical assistance arrives. □

Reprinted from the August 1980 issue of "Shenandoah Angle", newsletter of the Shenandoah Valley Chapter of Trout Unlimited.

Artificial Respiration For Fish

What's that? You've never heard of artificial respiration for fish? Of course, the method used is not the same as for humans! However, there is a procedure for reviving fish which, after a long struggle at the end of a fisherman's line, may lose consciousness and float belly-up when released. To learn more, read on.

Many anglers fish just for the sport and rarely take any of their catch home. They practice "catch and release" fishing. To assure that fish returned to the water will live to be caught again, there are a few simple rules that should be followed.

1. *Play and release fish as rapidly as possible.* A fish out of water cannot live for more than three or four minutes because of brain damage due to loss of oxygen. A fish played gently for too long may be too exhausted to recover.

2. *Keep the fish in the water as much as possible.* A fish out of water is suffocating. In addition, it is many times heavier and may pound itself fatally if allowed to flop on beach or rocks. Even a few inches of water under a thrashing fish acts as a protective cushion.

3. *Gentle handling is essential.* Keep your fingers out of the gills. Do not squeeze small fish. They can be easily lifted and held by the lower lip. Nets are helpful, provided the mesh does not become entangled in the gills. Hooks and lines catching in the net may delay releasing, so keep net in water.

4. *Remove the hook as rapidly as possible* with longnosed pliers, unless the fish is deeply hooked. In that case, cut the leader and leave the hook in. Be gentle and quick. Do not tear out hooks roughly. Small fish, especially, may die from shock by tearing out a hook. A freely bleeding fish should be killed.

5. *Reviving.* Some fish, especially after a long struggle, may lose consciousness and float belly-up. Always hold the fish in the water upright, heading upstream. Move the fish forward and backward so that water runs through the gills. This is artificial respiration and may take a few minutes, especially in lakes. When it revives, begins to struggle and can swim normally, then release it. □

Colonel's Commentary

With the winding down of the deer season comes the winding up of questions pertaining to the few days left for pursuing the elusive white tail. We think the questions come from a genuine desire to know, but that desire might be heightened by the panic that comes from knowing that the opportunity to bag some game is diminishing.

Although the season is over, the barrage of questions that comes at this time of year prompts the following explanation for your future reference.

A usually friendly voice at the other end of some distant wire asks, "Can I kill two does in the last six days if I haven't killed a deer yet?" When the game law pamphlet states, "either sex on the last six hunting days," it means just that! The otherwise unlucky deer hunter whose buck is still at large can, in fact, take two does during the last six days: "One a day, two a license year, either sex in the last six days."

The friendly voice usually shows signs of jubilation at the news of the new opportunity and asks, "When do I start? The six days have a Sunday in them." Note carefully that the law pamphlet says, "The last six *hunting* days." Counting January 5, start counting backwards, jump over Sunday with the vigor of an Olympic hurdler, and you will find upon landing that on Tuesday, you have the first day of doe season.

NRA Hunting Annual

Have gun, will travel?

If you intend to take this hunting season on the road, you will find lots of shortcuts in the 1980-81 edition of the *NRA Hunting Annual.* This year's annual offers a comprehensive listing of Denali guides and outfitters in nearly every state and Canadian province. Guides and outfitters specializing in bowhunting, black powder hunting or photography hunts are also listed in the "Special Service" section. A registry of taxidermists is also listed.

Even if a hunting trip is not on your schedule this year, you will find the NRA Game Survey included in the annual to be of more than passing interest. Organized according to big game species, the survey shows estimated populations, average hunter success ratios, and estimated annual harvest. A survey of waterfowl hunting is also very useful.

Mrs. Groover's Elephant Stew

1 elephant
2 rabbits (optional)
salt
pepper
brown gravy

Cut the elephant into bite-sized pieces (this should take about two months).

Cover with brown gravy and season to taste.

Cook over a kerosene stove for about four weeks at 445 degrees.

This will serve about 3,000 people. If more are expected, then the two rabbits may be added.

Feed Patches In Louisa

The extremely dry conditions last summer (1980) didn't seem to have any effect on the wildlife feed patches planted on land belonging to H. H. Walton in Louisa County.

Dwight Laws, Roger Hall and Hidmore Walton teamed together to plant several beautiful feed patches. Realizing that wildlife requires cover and water as well as food, they chose a site near a water supply along the forest edge. For over a decade these three sportsmen have planted feed patches for wildlife.

During the cold winter months, quail, wild turkey, doves and many different species of songbirds will thrive in these bountiful patches, thanks to the helping hands of three Louisa sportsmen.—*W. L. Parker* □

Delicious Peanut Recipes

BY JOAN CONE

Peanuts have been a major crop in Virginia since Civil War days. Why not use them to add variety and protein to your daily menus?

The most economical way to begin using peanuts is to purchase raw, shelled ones which can be frozen indefinitely in a tightly closed container. When ready to use, you can remove the red skins by pouring boiling water over the peanuts and letting them stay in the water for 5 to 8 minutes. Drain nuts and slip off skins by hand.

After skinned nuts have dried well, they can be roasted by placing them one layer deep in a shallow pan in a 350-degree oven for 15 to 20 minutes or until golden brown. Stir occasionally for even roasting. Now, you're ready to use them in any of these tasty dishes.

NATURAL PEANUT BUTTER

1 cup roasted peanuts
1 tablespoon oil
½ teaspoon salt

Place ingredients in an electric blender or processor. Blend until mixture becomes paste-like or spreadable. Store in tightly covered container. Homemade peanut butter will separate on standing so stir before using.

PEANUT BUTTER SOUP

½ cup natural creamy peanut butter
2 cups water
4 teaspoons water
¼ cup milk
sugar to taste
3 to 4 tablespoons chopped peanuts

Mix peanut butter with ½ cup water using a whisk until smooth. Add another ½ cup water and stir again until the mixture is smooth. Boil the remaining 1 cup water. Add peanut butter mixture, stirring constantly, and cook over low heat until it boils. Mix cornstarch and water and then pour paste slowly while stirring until soup thickens. Add milk and sugar and heat through. Serve hot with sprinkles of chopped peanuts. (Serves 3 to 4)

PLANTATION PIE

1½ cups flour
½ teaspoon salt
½ cup shortening
3 to 6 tablespoons cold water
3 eggs
1 cup dark corn syrup
2/3 cup sugar
¼ cup butter, melted
1 teaspoon vanilla extract
1 cup salted peanuts

Stir together flour and salt. Cut in shortening until pieces are size of small peas. Sprinkle with water, a tablespoon at a time, mixing lightly until dough begins to stick together. Press into ball. Roll out on lightly floured surface to circle ⅛-inch thick. Fit loosely into 9-inch pie pan. Trim pastry and flute edge. Beat eggs; add corn syrup, sugar, butter and vanilla. Mix thoroughly. Pour into pastry shell. Sprinkle peanuts over filling. Bake in a preheated 350 degree oven 45 to 50 minutes or until set. Allow to cool at least 1 hour before serving. (Makes 8 servings) □

BARBECUED BANANAS

4 bananas
4 teaspoons mustard
4 tablespoons honey
4 tablespoons finely chopped peanuts

Split peeled bananas lengthwise. Spread with mustard and put halves together again. Place on foil rectangle; spread with honey and sprinkle with peanuts. Close foil to make a tight package. Place on a medium hot grill 3 inches from coals and cook 6 to 8 minutes. Eat right from package. (Makes 4 servings) □

On the Waterfront

Edited by Capt.James N. Kerrick

A Reminder: New Boating Safety Equipment Required

Effective January 1, 1981, all boats carrying six or less passengers for hire and all recreational boats 16 feet in length shall be equipped with visual distress signalling devices at all times when operating on coastal waters.

In addition, boats less than 16 feet will be required to carry visual distress signals when operating on coastal waters at night.

This regulation applies to all coastal waters and those rivers two miles wide at the mouth and up to the first point at which the river narrows to less than two miles.

Inquiries may be addressed to Fifth USCG District Headquarters, Portsmouth, Virginia 23705, (804) 398-6202.

DISTRESS SIGNALS

Number marked on device	Device Description	Accepted for USE	Number Required To Be Carried
160.021	Hand red flare distress signals (1)	Day/Night	3
160.022	Floating Orange smoke distress signal	Day only	3
160.024	Pistol-projected parachute (2) red flare distress signals	Day/Night	3
160.036	Hand-held, rocket-propelled parachute red flare distress signals	Day/Night	3
160.037	Hand-held orange smoke distress signals	Day only	3
160.057	Floating orange smoke distress signals	Day only	3
160.066	Distress signal for boats, red rial pyrotechnic flare (3)	Day & Night	3
160.072	Distress signal for boats,	Day only	1
160.013	Electric distress light for boats	Night only	1

1. These signals must have a date of manufacture of October 1, 1980 or later to be accepted.

2. These signals require use in combination with a suitable launching device approved under 46 CFR 160.028.

3. These devices may either be self contained or pistol launched and either meteor or parachute assisted type. Some of these signals may require use in combination with a suitable device approved under 46 CFR 160.026.

Documentation Has Its Price

No-charge yacht documentation went the way of the free lunch this fall.

Once a free service of the federal government, documentation will now cost boat owners $75.00 for the initial certificate and $15.00 for annual renewal, according to the U.S. Coast Guard.

The user fees were piggybacked on the Coast Guard's fiscal year 1982 appropriation, putting to rest some fears that documentation would be eliminated completely in an austerity drive. The money bill became effective October 21, and documentation offices around the nation began charging for the service.

Boats five net tons or above, generally 26 feet and up, may be documented with the Coast Guard, a procedure that in some cases is almost prerequisite for financing. It also has been used by thousands of boat owners to avoid state registration and resulting in property taxes.

There are about 62,000 documented yachts in the United States.

Dead for the time being is a separate measure that stalled in the Senate which would set up a permanent user fee for vessel documentation. Under the current setup, the user fee arrangement will have to pass Congress every year until the permanent measure becomes law. (Sounding — December 1980)

Keep Your Outboard In Tune For Long Life

Another boating season is here, and for millions of powerboatmen, it's time to launch the rig and see if the outboard will kick over on the first turn of they key.

The chances are good if the owner has followed the recommended off-season and spring tune-up procedures.

You can increase the lifetime of your outboard, say the experts, if you see that it gets those seasonal checkups they talk about in the owner's manual.

The best place for a spring tune-up is an authorized outboard dealer, recommends Johnson National Service Manager Dick Gaiser. But he also has some tips for the do-it-yourselfer.

Read and re-read your owner's manual. It has a lot of tuneup "do's and don't's" spelled out.

Remove, inspect, clean and properly re-gap the spark plugs. Replace defective plugs with those recommended by the manufacturer. Properly operating spark plugs are a basic key to good engine performance. Note: Spark plugs should be cleaned with a wire brush or in solvent; never sand-blast.

When the motor was put in storage last winter, the gearcase should have been drained, and refilled with the recommended lubricant. If it wasn't, do it now.

On electric-start outboards, make sure the battery is fully charged. Clean the terminals of dirt and corrosion. Ditto the battery cable connections. It's also a good idea to coat the cable connections with a light layer of grease, to help prevent corrosion.

Check that propeller, too. If the blades are bent, even a little, straighten them out. If the prop is too worn, get a new one. Propellers are relatively inexpensive, but a small "ding" or bend in just one blade can greatly reduce a motor's performance.

After the boat is in the water, check the motor's operation at dockside. Look particularly at the water pump and thermostat cooling systems to be sure they are operating at peak efficiency.

These are simple steps that don't require much time. If you think your motor needs a closer look, take it to a factory-authorized dealer. He has the special knowledge and equipment it takes to do a top-notch tune-up and service job. □

In Nature's Garden

by Jack Randolph

Spike Knuth

Greenbriar

"How many rabbits did you get yesterday?" I asked.

"How'd you know I was huntin'?" countered Chet, as we started varsity basketball practice at Allentown High School

"The way your legs and hands are all scratched up, you've either been rabbit huntin' in the briars or in one heck of a cat fight," I answered, my own scars of yesterday's hunt highly visible on my legs and arms.

"We got a few rabbits and some birds," admitted Chet and looking around the gym he observed, "It looks like half the team has been huntin', judging by the scratches on them."

It was a toss-up whether the scratches were caused by the thorns of greenbriars or blackberries, because both are prize cover for cottontails. Any rabbit hunter worth his salt is familiar with the fact that bunnies look right kindly upon briar patches as places to seek protection from the countless enemies that pursue them. Blackberry patches are formidable, but when it comes to stringing a woods with natural barbed wire, you can't beat greenbriars.

When I was a kid we called all greenbriars "catbriars" but this name is not entirely correct. There are about 215 species of greenbriars world wide, of which about eleven are found in our part of the United States. There are really about five species that are important to wildlife. These include the common greenbriar, cat greenbriar, laurel greenbriar, laurel and lanceleaf greenbriar, all of which can be found in Virginia.

The most surprising aspect of greenbriars to me has been the discovery that these formidable thorny plants not only provide wildlife with very effective cover, but they are also an excellent source of food to many species of wildlife.

Three parts of the greenbriar plant are eaten. The blue-black berries of the greenbriar are popular with many song birds and mammals. Among just a few of the creatures that enjoy the berries are wood ducks, ruffed grouse, pheasants, quail, wild turkeys, crows, fish crows, cardinals, catbirds, mocking birds, sparrows, woodpeckers, cedar waxwings, bears, opossums, raccoons, squirrels, red foxes, gray foxes.

Although it is difficult to imagine anything eating the thorny stems of greenbriars, biologists consider the stems and leaves to be one of the most important food items for deer. Rabbits, beaver and muskrats also utilize the stems and leaves. The new shoots from the greenbriar are highly palatable and the stems are high in nutrition, providing a valuable source of protein, particularly in the winter months.

Perhaps one of the most important features of greenbriar as a wildlife food is its availability during the lean, winter months of the year. High in protein, it provides nourishment when it is needed most.

One of the saving graces of greenbriar is it can stand a lot of browsing. Within limits, the more the briars are browsed the more tender shoots they add. Where cattle are permitted to graze, greenbriars are heavily utilized and may not be available to wildlife.

Greenbriars, like most plants, reproduce by seed, but most spread rapidly by means of underground stems. Oddly, nearly all of the annual growth of greenbriar takes place in one month, generally between April and May. Plants that grow in the open generally produce longer new growth than those that live in the shade.

If you would care to gain an appreciation of the role greenbriar plays in providing food and cover for songbirds look for a patch along the edge of a marsh during the dead of winter. If you sit quietly and keep your eyes open you will be amazed at the abundance of birdlife using the food and protection of greenbriars.

Serious rabbit hunters spend many arduous hours wading through the heavy greenbriars as they attempt to flush rabbits for their dogs to run. Some hunters, hunting without dogs, attempt to shoot rabbits on the jump in the thick cover using open bored shotguns.

It wasn't long ago that I considered briars a necessary evil of rabbit hunting. It has only been recently that I have come to recognize these magnificent, hardy plants for what they really are, the staff of life in our forests. Of course, the next time a briar catches me around the legs I won't like it anymore than I used to, but at least I've come to recognize that greenbriar not only belongs to our environment, but it plays a priceless role in that wonderful yet mysterious world of which all of us are a part. □

Bird of the Month

by Carl "Spike" Knuth

The Pied-Billed Grebe

It is somewhat of a mystery bird. Not particularly attractive, it has a bill too big for its head and body and is nearly tailess! An excellent swimmer and diver, it has the ability to merely sink out of sight beneath the surface of the water while sitting motionless. While it may surface, only its bill and eyes will be above water. The onlooker will be totally convinced that the bird is still somewhere underwater.

The pied-billed grebe is a member of an unusual and interesting group of diving birds. Scientists have classed it in an order called "Pygopodes," from the Greek "rump" and "foot," referring to the location of its legs in relation to the rest of its body. The grebe's "tibia," or drumstick, is located beneath its skin and feathers, which brings its heel joint close to its tail. With its legs so far back, the grebe has great difficulty on land, walking penguin-like and often pushing itself on its belly.

The pied-billed grebe, often called the helldiver as well as waterwitch, witch duck, dabchick and, in the Back Bay area, "sinkin' Peter," is about 13 inches long. Its color is basically brownish-black above with lighter brown and white below, brownish wings with whitish speculum and fluffy white underneath coverts. There is no variation in colors between sexes, but there is a seasonal plumage difference. In winter (see illustration) it has a white chin with a patch of dark brown on its throat. In spring and summer, it acquires a full black patch on its chin and throat with a wide black band around its somewhat cone-shaped bill. The pied-billed grebe has a very dense covering of feathers over a body that is almost entirely encased in a thick layer of fat. Overall, its plumage is smooth, almost fur-like. The wings of the grebe are short and in flight, its over-sized feet hang out behind.

Grebes seldom take wing when startled, preferring instead to dive, which they can do with amazing quickness. Underwater, they propel themselves by their big feet with flattened, lobed toes.

During breeding, it is shy and secretive and usually you will only hear its mating call. It is the most widely distributed of the grebes, breeding over almost all of the continental United States and most of Canada from British Columbia; northern to southern MacKenzie; east to New Brunswick; and in Chile and Argentina. It favors large cattail or reed and bullrush edged marshes such as Back Bay.

Its nest is a matted, floating structure made of dead grasses, reeds, mud and other vegetable matter. They usually add live green stems for buoyancy, or anchor the whole structure to growing vegetation. The hen lays six to nine greenish white eggs in her platform-like nest. When she wants to leave the nest, she will bring up soggy, bottom vegetation to cover the eggs, making the nest look like a heap of marsh debris. The nest is almost always damp, with the eggs often getting water-covered.

Once the young hatch, they take to the water almost immediately. They can swim and dive readily. Sometimes the hen carries the fuzzy black and white striped young on her back, often even diving with them when danger threatens.

The main foods of the "helldiver" include aquatic beetles, aquatic insets and larvae, leeches, fishes, crayfish and other crustaceans. I recall a day in a calm marsh slough when I noticed a commotion on the water. At first I thought it was a bird bathing and splashing, then it looked like some sort of a struggle. I put the binoculars on the activity which revealed a pied-billed grebe with something in its bill, throwing its head back in convulsion-like movements. After a while, I was able to discern that it had a frog and was attempting to swallow it, with legs still hanging out and kicking. One oddity about the grebe's diet that naturalists have discovered is the fact that its stomach invariably contains a considerable amount of feathers. The young are often fed feathers. It is assumed that they play some essential, though unknown, role in the digestion of food.

Enemies of the grebe include large fish, mink, snakes, and muskrats. It winters from the Pacific northwest to Texas, Mississippi, and Potomac Valley south, as well as Mexico, Central and South America. In Virginia, look for pairs of single dark brown, round-headed grebes on small lakes or ponds, the coves or arms of large reservoirs, tidal rivers, back water sloughs and large marshes. □